DOCUMENT RESUME

ED 196 347 HE 013 352

AUTHOR	Andrew, Loyd D.; And Others
TITLE	Analysis of Uses of HEGIS Data. Final Report.
INSTITUTION	Virginia Polytechnic Inst. and State Univ., Blacksburg.
SPONS AGENCY	National Center for Education Statistics (DHEW), Washington, D.C.
PUB DATE	Nov 80
CONTRACT	300-79-0366
NOTE	305p.
AVAILABLE FROM	National Center for Education Statistics, 400 Maryland Ave., SW, Washington, DC 20202
EDRS PRICE	MF01/PC13 Plus Postage.
DESCRIPTORS	Data Bases; Educational Policy; *Higher Education; *Information Needs; Information Utilization; *National Surveys; Public Policy; Statistical Analysis; *Statistical Data; *User Satisfaction (Information); Use Studies
IDENTIFIERS	*Higher Education General Information Survey

ABSTRACT

An attempt was made to determine who uses data from the Higher Education General Information Survey (HEGIS) and for what purposes. The study objective was to learn if HEGIS is a necessary and useful data base for determining the condition of higher education and developing policy. The quality of the HEGIS data perceived in terms of accuracy, timeliness, and characteristics of computer tapes and related documentation was determined, as was the need for universe data and annual surveys. Two literature reviews, more than 70 interviews of users and contributers to HEGIS, and surveys of two different populations of users were undertaken. Findings include the following: (1) HEGIS data have provided a foundation for the majority of reports and books that have affected public policy on higher education; (2) enrollment and financial data are used much more extensively than other survey data for analyzing the condition of higher education, policy analysis, and for making decisions at state and local levels; (3) accuracy has improved; (4) timeliness of data is seen as a major problem; (5) the uses of HEGIS data have increased significantly in recent years; (6) HEGIS data have not been used as extensively as they might in reporting on the condition of women and minorities in higher education; and (7) more data are wanted on student characteristics and financial aid. Recommendations, an extensive bibliography, a sample questionnaire, and a list of interview questions are included. (SW)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED196347

HE013352

FINAL REPORT

ANALYSIS OF USES OF HEGIS DATA

Produced for the

National Center for Education Statistics

Contract Number 300-79-0366

November 1980

This report was prepared for the National Center for Education Statistics by Virginia Polytechnic Institute and State University under contract number 300-79-0366 with the Department of Health, Education and Welfare (now Department of Education). Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment. This report, therefore, does not necessarily represent positions or policies of the Department, and no official endorsement should be inferred.

College of Education

Virginia Polytechnic Institute and State University

Blacksburg, Virginia 24061

Principal Investigator

Loyd D. Andrew

Co-Investigators

Jim Fortune, Larry McCluskey

Project Officer

Gerald Malitz
National Center for Education
Statistics

U S DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

EXECUTIVE SUMMARY

WHO USES HEGIS DATA FOR WHAT PURPOSES

Introduction

The purpose of this study, conducted for the National Center for Education Statistics, was to determine who uses HEGIS data and for what purposes. More specifically, it was designed to learn if HEGIS is a necessary and useful data base for determining the Condition of Higher Education and developing policy for this enterprise in relationship to national interests. Answers were sought to the following questions: Who uses HEGIS data and for what purposes? How is the quality of HEGIS data perceived in terms of accuracy, timeliness, and characteristics of computer tapes and related documentation? To what extent are universe data and annual surveys required? What could be done to improve the usefulness of HEGIS data for analyzing and reporting on the Condition of Higher Education? These questions are more fully developed in the body of the work, particularly in Chapters I and V.

METHODOLOGY

In attempting to answer these questions, several different research methodologies were employed: 1) two distinctly different types of literature review; 2) more than seventy interviews of many different types of users and contributers to HEGIS; and 3) two different sample surveys of two different populations of users to which the project team had access.

Literature Review

First, a review of the literature of higher education and publications concerned with some aspect of the impact of higher education on American society was conducted. In this review, two quite different approaches were employed: 1) a conventional review was conducted to determine trends in uses of the data, and 2) a statistical sample of the appropriate literature was drawn to determine the level of use.

Interviews

The review of the literature provided a written and statistical report on the uses of HEGIS in publications. In addition, it enabled the Project team 1) to identify some of the major users of data or potential major users--key scholars, research organizations, education associations, government agencies, and foundations, and 2) to develop types of questions to be used in interviews. Thus the literature provided a list of users and questions. To this list were added names suggested by the members of the Technical Advisory Panel.

Each interview required from one to two hours. While the interviewers used an interview guide, the interviews were only marginally structured. The interviewer attempted to learn not only how the interviewee had used HEGIS data but also what impressions or opinions he had about its quality and its use in the higher education enterprise. Most of the interviewees were quite articulate with strong but thoughtful opinions about HEGIS data and its applications.

Surveys

The reviews of the literature, suggestions of the Technical Advisory Panel, preliminary interviews, suggestions of NCES staff, and log of purchasers of HEGIS computer tapes and EDSTAT services provided the basis for identifying two different populations to be sampled. A statistical sample of states and institutions within those states was taken, and a second sample was drawn from the log of purchasers of HEGIS data. These two samples were used by an independent researcher to augment her own sample of users of higher education information. She supplied the project team with the results of her study.

FINDINGS

Despite the different methodologies and different populations that were sampled, there was major aggrement on most issues concerning the uses of HEGIS data for analyzing and reporting on the Condition of Higher Education at all levels. The findings, which are fully summarized in Chapter V, support the following conclusions and recommendations:

CONCLUSIONS

Most of the hypotheses developed during the review of literature and initial interviews, and subsequently tested through further interviews, surveys, and with audiences of users, were supported. The following includes a statement of these hypotheses and the degree to which the findings supported them.

1. HEGIS data have provided a foundation or base for the majority of reports and books that have affected public policy on higher education. Almost everyone that was interviewed agreed with this hypothesis while admitting to the principal investigator that it is difficult to show a direct cause and effect relationship. As noted more extensively in the body of the report, many factors and interests contribute to the development of public policy, not least of which is the lobbying of representatives of higher education. During the process of setting policy and

making law, lobbyists and analysts both at the executive and legislative levels have to consider the interests of many constituencies and conflicting priorities. However, it appears from a review of higher education as well as from other literature that ideas behind much policy and law generally precede the full development of policy and its conversion into law by several years. In higher education, for example, the Carnegie Commission for the Study of Higher Education has produced extensive studies on higher education, many of which utilized statistics from the Higher Education General Information Survey system and other sources, such as the Census, to describe the condition of higher education and to provide a foundation for policy recommendations. It seemed to this author and to many interviewees that a considerable amount of higher education law and policies in the seventies, appeared to be derivatives of much of what was recommended by such foundations as Carnegie and the research sponsored by various federal and state agencies. Other evidence that HEGIS data provide a base for law is found in the extensive quotation of HEGIS data during Congressional Hearings on Higher Education (see the review of literature for examples) and reports by interviewees. Most educational associations develop voluminous reports on the condition or projected condition of higher education for their own constituencies, as well as appropriate staff of Congressional committees and executive agencies. In addition, the staff of associations and of Congress work closely together by telephone and memoranda with association staff supplying data or analyses. The data come from the associations' own research, the Bureaus of Census and Labor Statistics, and from HEGIS. (For an example of how associations work with Congress, see Roark, Oct. 6, 1980, p. 3.)

2. *Enrollment and financial data are used much more extensively than other survey data for analyzing the Condition of Higher Education, policy analysis, and for making decisions at state and local levels*. This is probably true. (True is used here and elsewhere in the report in a relative sense.) However, Degrees and Other Awards Conferred data are used extensively in conjunction with enrollment data for manpower planning and evaluating affirmative action programs and persistence of students. Faculty and employee salary data is reported extensively as is tuition and fees because of the impact on personal and institutional decisions. These data are used to some degree in policy development.

3. *Accuracy has improved*. Generally the accuracy of all surveys is deemed acceptable. The lone exception to this is in aspects of the financial survey. The financial survey file is probably used more than other files in making complex analyses of the condition of higher education. Moreover, there are many difficulties in reporting and interpreting financial data because of differences among institutions in government and accounting practices. Thus, reports of dissatisfaction with the relative accuracy of the HEGIS file were not unexpected. The major problems with the financial file are summarized in Chapter II. The

findings were drawn from Hyatt and Dickmeyer, An Analysis of the Utility of HEGIS Financial Data, May 22-23, 1980. It seems that many of the problems with the file would probably be corrected by more extensive documentation about the accounting practices and governance of certain institutions.

What was unexpected was the relatively high esteem that surveyees and interviewees had for the accuracy of most of the files. A recent study by NCES confirms the opinion of surveyees and interviewees about the relative accuracy of enrollment and degree data. The NCES study (Westat, 1979) reported that there was less than one percent difference between survey and audit data on enrollment and degree data. However, certain caveats are in order about the accuracy of the files. Some researchers are concerned about the levels of aggregation in the files on Enrollment and Degrees Awarded. Another respected researcher believes that the financial file is more accurate than perceived, relative to the other files, and that the concern about the file is a function of its extensive study and use, as she believes expectations concerning accuracy increase with the use of data. It is also worth noting that one interviewee familiar with how library data have been collected or estimated in the past questioned the accuracy of this file. Library and facilities data have not been reported nor collected for some time and, therefore, not used extensively, at least for complex analysis, in the last few years.

4. Timeliness of HEGIS data is seen as a major problem. This was found to be a major problem with HEGIS. The delay of nearly a year or more, justified or not, between collection and distribution of data in machine processable form and hard copy publications is seriously affecting the use of HEGIS. Though there has been recent improvement in releasing tapes of certain files faster, there is still considerable dissatisfaction with the timing of releases. This dissatisfaction is reflected in findings from surveys and in the comments of researchers who work both for educational associations and institutions, charged with reporting to their constituencies and/or supplying data for making administrative and budget decisions. Students of higher education also voice the same complaint. The lack of timely data, as well as difficulties in accessing data in machine processable form (if the data aren't used regularly), probably leads institutions and associations to do more collecting of data through their own surveys (formally or informally) that would be unnecessary if HEGIS data were released more quickly.

However, the expectations of some institutional researchers for delivery of data to support budget proposals, etc. can probably not be met. The primary purpose of HEGIS was and is to report on the condition of higher education at the national level, though such reporting necessarily requires analyses of various sectors of the enterprise. But, the data are also used for secondary purposes (for example, making comparisons among institutions by institutions and state agencies). These uses have occurred because the system provides for consistency in reporting on such matters as finances, degrees and enrollment for a universe of institutions. Generally, comparative data are wanted by state agencies and institutions for budget analyses. Since the budget cycle is almost continuous at the institutional level and budget development for the next year generally begins before actual data on the current year are collected by HEGIS, institutions find that they are required to use projections and revise them as actual data is collected. These revisions quite often are occurring as their reports to HEGIS go forward to intervening agencies, such as state boards, for edits and eventual forwarding to NCES for further edits. Thus, by the time NCES has the data for edit, institutions may have completed their budgeting process for the next year. The cycle and the process therefore appear to preclude NCES' ever delivering reports in time to support budget requests by institutions. Thus, what is going on will probably continue, and, in a sense, provides a use of HEGIS in a very informal way--the trading back and forth of data among institutions that they have collected for their own management or for HEGIS long before such data do, or could possibly, appear in HEGIS reports.

This is not to excuse HEGIS from the requirement to report results of its surveys earlier. Currently, certain HEGIS data are reported in hard copy form as much as two years after the data were collected. Tapes and publications tend to be released as much as a year or longer after the data were collected. This is unacceptable. There was general consensus among interviewees that the data should be published both in machine processable and hard copy from six months and a year (even if this meant leaving out late reporting institutions, thereby sacrificing completeness and accuracy) after collection.

5. The uses of HEGIS data have increased significantly in recent years, particularly in the sophistication with which they are used.

6. HEGIS data have not been used as extensively as they might be in reporting on the condition of women and minorities in higher education because overhead or start-up costs in using HEGIS data for analysis is relatively high. Experienced users tend to disagree that start-up costs are high; but then they have already paid those costs. There has been a spurt of studies on ethnic groups and women in higher education in the last year, quite a bit of it being published and disseminated since the review of the literature was published. Thus the conclusion may not be tenable in the future.

7. HEGIS is a system that would have to be invented if it were not already in place because of the increasing need for data in policy making and planning. Everyone agreed with this notion.

8. More data are wanted on student characteristics and financial aid. Without question more information is wanted on the latter. There appears to be more disapproval than approval for HEGIS' collecting data on student characteristics, institutional quality and outputs. However, there is more and more demand for such data from policy makers and consumers. Data are being gathered and data bases are in place or being developed. Some interviewees suggested that NCES should act as a broker in gathering data from other Department of Education program offices, funding the collection and maintenance of data bases, and disseminating data.

9. The collection of HEGIS data has had an impact on the discipline and sophistication of data collection systems at institution and state levels. This seems to be a reasonable conclusion. It was generally agreed that this discipline has facilitated the exchange of information among institutions.

10. The collection of HEGIS data does not impose a heavy burden on institutions since most of the data would be collected by institutions and/or states for management purposes anyway. This conclusion seems reasonable although opponents of government regulation and data collection may argue with it. The interviewees did not see a heavy burden for ongoing systems. There is a distinct burden cost when changes are made in taxonomies, questionnaires (both of which can cause reprogramming) and/or changes in schedules.

11. Institutions are concerned about the uses of HEGIS for comparison purposes. This conclusion certainly holds for comparison of unit costs, resource allocation, and funding. Generally institutions do not believe the data can be used for institution-to-institution comparisons because of timeliness, or lack thereof; lack of appropriate detail; differences in organization and accounting practices; and inappropriate comparisons of unlike institutions.

12. There was general agreement that data are required from all of higher education because of differences among institutions and the uses to which the data are put. Moreover, most compilers at the institutions felt that the burden of collection would be increased rather than lessened if a sample of institutions was taken because of the increased problems in planning for and managing the collection.

Other conclusions indicated by the findings are the following:

1. HEGIS data can be used for making comparisons among sectors of higher education. In fact, many would argue that it is accurate enough, when handled appropriately, for making state-to-state and inter-institutional comparisons.

2. HEGIS is not being used as fully as it might be for policy analysis, planning and evaluation by either business or university scholars. As noted earlier, there is only a small coterie of scholars and students in universities that is using HEGIS for the above purposes. While there are strong indications that data are being used somewhat by businesses for planning recruitment and evaluating or negotiating affirmative action programs, these uses seem fairly unsophisticated. There is little information in the general literature on higher education about the contents of HEGIS and how to use it.

RECOMMENDATIONS

Several recommendations follow naturally from the above conclusions and are divided into two sections. The first group of recommendations, not necessarily in order of priority, are those which should be addressed immediately by the National Center for Education Statistics. The second group, again not in order of importance, are those which NCES should investigate after the first group. The recommendations are organized in terms of objectives and each objective includes recommendations or suggestions for achieving the objective.

First Priority Recommendations

Improving timeliness of dissemination. As noted in the conclusions and indicated in findings from the literature as well as from surveys and interviews, the major complaint with HEGIS is the timeliness and form in which the data are reported after collection. For example, a survey of the literature indicated that frequency of use generally parallels the collection and reporting of data. Moreover, and somewhat contrary to earlier expectations, the publication and distribution of the data in hard copy as well as on computer tapes is necessary since many researchers and governmental staff need to refer to published material for quick information. At the same time, machine processable data are required for complex analyses and full reporting on the condition of higher education by sectors.

Therefore, it is recommended that NCES do what is necessary to obtain the timely support of other government agencies, in particular the Government Printing Office, to expedite the publication of reports in hard copy while improving the timeliness of access of machine processable data by tapes or EDSTAT terminals by speeding up editing, data processing, and reproduction cycles. It is recognized that improving timeliness to meet a target release of six months to no later than a year after data collection may require publication of data prior to the receipt of reports from certain institutions or states. Their absence and the reasons for such absences should be noted in the reports. At the same time, it it probably would be useful to continue to input or estimate data for the missing institutions, so noting.

Insuring Completeness and Continuity of the Data Base. While a major priority must be given to early reporting of HEGIS data, even if this means publishing prior to receipt of reports from all institutions, provision should be made for including data from the tardy institutions as they are received, both in hard copy publications as well as the machine processable data files. Thus provision should be made to issue addenda in a timely fashion and revise the master data files. These addenda should be published and the files should be revised in a timely and probably incremental manner.

Dissemination of Data. NCES should give increased attention to improving the dissemination of HEGIS data. As noted in the review of the literature, there is little information in the general literature of higher education about "how to use" and the availability of HEGIS data. Users of the data generally learn about HEGIS' availability from NCES publications or from prior users. Several methods of improving dissemination should be considered by NCES:

1. Presidents of institutions and those in the institutions who are charged with the collection and compiling of HEGIS surveys for their institutions should be provided special reports that show how an institution compares with its peers or its region.

2. Not only presidents of institutions, but those who actually complete the surveys, should receive complimentary copies of the HEGIS reports or, at the minimum, abstracts of such reports.

3. It would be helpful if known students of higher education received either abstracts or copies of HEGIS reports.

4. The feasibility of NCES to license or otherwise support certain private or non-profit agencies in distributing HEGIS data files and/or providing special reports from HEGIS data files should be investigated. Certain contractors and non-profit institutions are currently acting as retailers of HEGIS data by performing special edits and/or reports for one or more institutions. However, the availability of these services does not appear to be widely known. NCES is now supporting several efforts, sometimes in conjunction with other agencies, such as the National Science Foundation, to upgrade the quality of HEGIS files, particularly in historical files on finance and enrollment. These efforts should be catalogued and the availability of these files should be widely disseminated so other users could obtain access to the upgraded files, either through NCES or the agencies at a reasonable cost.

5. The current practice of NCES in releasing the results of HEGIS surveys in bulletins and press releases should be extended.

Increasing Contract Support to Encourage Small Users of the Data. The findings suggest that the major impediments to the uses of HEGIS data are lack of timely release, lack of knowledge about the availability of the data except among a small coterie of users, and "start-up" costs for new users of HEGIS computer tape files. Several recommendations have been made above for improving the timeliness of reports and the dissemination of reports.

However, there is still the problem of encouraging the use of the data for research and reporting on the condition of higher education. The quality of the data in terms of timely reports by institutions, accuracy, and completeness (as well as complaints about its current quality) can be expected to increase with use of the data. Thus the richness, accuracy and completeness of the resource for analyzing the condition of higher education to support useful and insightful policy and law would grow through use. For example, the value of the data has already been enhanced by NCES and foundation-supported studies that have highlighted the plight of certain sectors of higher education in terms of enrollment projections and financial resources. Other researchers have been encouraged to use the data to describe the status of disadvantaged or new clientele in higher education; for example, blacks, hispanics, and women. However, such contracts and grants generally have not provided support to a large body of researchers.

Therefore, it is recommended that more support be provided to students of higher education for using HEGIS data to examine conditions generally outside the primary interest of education associations. One model worth examining is the small grants program of the National Science Foundation, which supports research using NSF data files to study higher education programs in science.

At the same time, NCES should attempt to obtain additional staff support for more in-house analysis of HEGIS data and using such data in conjunction with other files. It should continue to support such effects as research to improve the utility of finance data.

Collecting Financial Aid Data. Reports of previous studies for improving HEGIS data as well as the findings of this study indicate that NCES should give high priority to collecting and/or disseminating more data for evaluating the impact of financial aid programs and for developing policy in this area.

There are complex problems in defining what data are necessary and how data should be collected regarding the impact of financial aid programs on the resources of institutions, and equality of opportunity and choice for students. Much of the data may already be available in other offices of the Department of Education and in the Office of Civil Rights.

Prior to implementing a new collection effort, NCES should determine what data are available in these offices and what is necessary to include in HEGIS where it could be easily accessed for analyses. However, it is likely that all of the necessary data are not yet being collected, by either government or private agencies. It may be necessary to collect data from students who do not receive financial aid as well as from those who do. In such a case, it probably would be useful to take statistical samples of the student body. This will represent a new practice for HEGIS and the institutions who compile HEGIS data since they now compile data through the institution from the universe of such populations as students, faculty, dollars, and space.

Continuation of Universe and Annual Surveys. One of the problems of this study was to determine whether universe data should be collected and how often surveys should be made. All but three (facilities, libraries, and total employees) are made yearly. Both users and compilers of data for the surveys agreed that universe data are required, because of the diversity of institutions, and that regular surveys are necessary. Management of the data collection process is facilitated (and thus the burden is eased) when compilers can plan for the data collection on a regular basis. It appears that data that are collected annually are required on a yearly basis and that the collection and publication of library and facility data should be done with more regularity and perhaps more often.

Therefore, it is recommended that 1) universe data continue to be collected; 2) that the data now collected annually continue to be collected yearly; and 3) that the collection and dissemination of facility and library data be scheduled regularly.

Collection of Facility Data. It has been several years since facility data have been collected by HEGIS from the institutions. During this period, there have been many predictions that higher education has excess capacity in both facilities and faculty for projected enrollments. Given these predictions, it may be that investment in facilities has declined while facilities have aged, equipment has been made obsolete by newer technology, and needs have changed because of enrollment shifts by region, school, discipline, and other factors. But whether the above is true is not known since there has not been a recent survey of facilities.

Therefore, it is recommended that NCES conduct a facility survey in 1981 as planned. At the same time, NCES should begin a study to determine whether and how the current survey instrument should be revised for follow-on surveys to determine more fully the effects of deferred maintenance, technological obsolescence, and shifting needs on facilities. Unfortunately, most institutions of higher education, unlike private businesses, do not provide or account for depreciation and technological obsolescence. Thus, the design of an appropriate survey instrument will require considerable thought if the instrument is to collect data that will adequately describe the condition of higher education facilities in relationship to needs.

Second Priority Recommendation

Increasing the scope of the surveys. The literature, interviews, and conference reports on the utility of HEGIS data, suggest that HEGIS should collect additional information for reporting on the condition of higher education. It has already been recommended that NCES provide leadership in compiling and disseminating data collected by the Department of Education program office and the Office of Civil Rights that is already being collected, particularly on the source and distribution of financial aid fund. Other additions or extensions of the surveys that should be considered are the following:

1. Faculty Salary Data. In addition, there appears to be a need for more detailed information on faculty salaries, at least at the institutional level. Several institutional planners reported that faculty salary data by discipline are used for making resource allocation and personnel decisions. However, members of the Technical Advisory Panel questioned whether the data were needed for reporting on conditions at the national level. There was also some fear that the collection of such data would be difficult and might further delay the reporting of salary data.

However, institutions do make faculty decisions by discipline and it can be projected that a good analysis of the status of women and minorities in higher education would require faculty salary data by discipline. It is probably that data by discipline is required only at fairly high levels of aggregation--for example, hard sciences, social sciences, and such professional schools as business administration, education, medicine, law, and engineering.

Since there are difference of opinion on how badly the data are needed, and at what levels they should be collected, it is recommended that NCES conduct a special study of the need for these data and the impact that such a collection would have on improving the timely release of data that are now being collected.

2. Employee Data. The data currently being collected on employees in higher education, for other than full-time faculty are relatively limited. For example, current surveys do not provide very much useful information

on part-time faculty, graduate research and teaching assistants, research associates, and post-doctoral candidates involved in teaching and research. There are indications that the former mix of full-time faculty to other types of personnel for teaching and research is shifting. Increased amounts of data on personnel could provide information on whether there are significant shifts in the mix of personnel and higher employment opportunities for manpower planning. Therefore, it is recommended that NCES consider the feasibility of collecting additional data on employees.

3. Output and Quality. The review of the literature and interviews indicated that there is a growing demand for more information about the outputs and quality of higher education, and student characteristics. Certain associations and scholars, regularly or (more often) irregularly, collect data on output, quality, and student characteristics. Perhaps most notable among these reports are Dr. Astin's yearly study of freshmen, entering class CIRP* (Astin, 1977), the NCES National Longitudinal Survey of the 1972 high school graduation class, and various profit and nonprofit directories of higher education institutions. The latter often provide some data on student characteristics--in particular, admission requirements in terms of grades and test scores.

Although there are increasing concerns for measuring and reporting the quality and outputs of higher education and/or for particular institutions, there is wide divergence on what outputs and quality are and how they can be measured. Despite these problems of measurement there is increasing anxiety about perceived declines in quality, the potential effects of competition for students on quality, and the lack of consumer information to aid students and their parents in selecting institutions. There also seems to be growing dissatisfaction with using student credit hours or other enrollment measures as the major measure for allocating resources.

Therefore, it is recommended that NCES support studies to determine whether the demand for the above data would justify the burden on institutions and/or government agencies that collection of such data would impose. Support should also be provided for research and development on measures of quality and output. It is also recommended that NCES should determine what is currently being done and reported by scholars and associations and how it might best support these efforts and act as a broker in disseminating the data widely for research and reporting on the condition of higher education.

Recommendations of the Technical Advisory Panel

In its review of the preliminary draft of the final report, the Technical Advisory Panel noted that the report provided documentation that supported their perceptions that HEGIS was a necessary and increasingly more used data base for reporting and analyzing the condition of higher education. It strongly supported recommendations for improving timely reporting and the means that were suggested for encouraging the uses of HEGIS data.

---

*Cooperative Institutional Research Program.

It recommended that the report be widely disseminated and that NCES and the higher education community support efforts to get the recommendations implemented at the earliest possible date.

It was also recommended that NCES commission a study to determine (1) the relative investment in collecting statistics on education, (2) the efficiency or effectiveness of current collection and dissemination efforts, and (3) what might be done to improve effectiveness.

ACKNOWLEDGMENTS

From the beginning days of the project to determine the uses of HEGIS data, those people in the higher education community who were asked to take part in the project have given freely of their time in providing advice, participating in interviews that generally lasted from one to two hours, and completing questionnaires. The twenty-two members of the Technical Advisory Panel shared ideas for nearly eight hours in an early meeting of the panel, reviewing a 500-page document that provided a preliminary study of the literature and a proposed methodology for the study. The Panel not only critiqued what was proposed; they also suggested new lines of inquiry and sources for obtaining additional information. Al Cooke, Jim Farmer, Bill Toombs, and Maryse Eyemonenie were among those who did a follow up of the meeting with extensive commentary on what ought to be done. Others reviewed and commented on the minutes of the meeting. Particularly helpful were the comments of panel members on the final review of the literature, delivered to them in March of 1980. Unfortunately, time did not permit every lead recommended by the Panel to be pursued; however, the extent of what the Panel suggested is indicated to some degree by the fact that the list of interviewees grew from 25 to more than 75.

The members of the Technical Panel were the following: Curtis Baker, NCES; Bob Brown, Bureau of Labor Statistics, U.S. Department of Labor; Al Cooke, National Advisory Committee on Black Higher Education and Black Colleges and Universities; Hugh Dawkins, Western Maryland College; Nathan Dickmeyer, American Council of Education; Maryse Eyemonenie, formerly with American Association of University Professors and now a consultant to AAUP and various institutions and agencies; Virginia Fadil, National Association of Independent Colleges and Universities; James Farmer, Systems Research; Jonathan Fife, George Washington University; Sister M. Gallin, Association of Catholic Colleges and Universities; William Gescheider, Bureau of Post-Secondary Education; William Graybeal, National Education Association; K. Scott Hughes and James Hyatt, National Association of College and University Business Officers; Gerald Malitz, Project Officer, NCES; Joseph G. Rossmeier, Northern Virginia Colleges; Frank Schmitdlein, Maryland State Board of Higher Education; William Toombs, Center for Study of Post-Secondary Education; Richard Wilson, American Association of Community and Junior Colleges; and Paul Wing, the New York State Education Department.

Many of the above members also served the project by being subjects of interviews and by completing special surveys to provide base-line data on the uses of HEGIS. The project was particularly well served by Carol Frances, Nathan Dickmeyer and Jim Hyatt who invited the principal investigator to three symposia on the utility of HEGIS financial data for examining the condition of higher education. These symposia not only provided the investigator with an opportunity to acquire more information about the uses of HEGIS and the difficulties being encountered in using financial statistics; they also enabled the investigator to test preliminary findings on an extremely knowledgeable audience at two of the symposia.

Jane Ryland of SHEEO also provided the investigator with an opportunity to obtain more information on the uses of HEGIS and to test further preliminary findings by asking him to participate in a conference of state coordinators of HEGIS data.

The project was also served by the Southern Association of Institutional Researchers who set aside several hours of their annual conference for the principal investigator to meet with approximately 25 institutional researchers from most of the southern states. Glynton Smith orchestrated this session so that the principal investigator and a co-investigator, Jerry McLaughlin, received a hearty supply of perceptions by institutional researchers about what was good and bad about HEGIS and what was needed for its improvement. This meeting also provided reports, new lines of inquiry, and more leads for interviews.

The interviewees deserve special commendation for giving two hours of thoughtful time to answering questions about the uses of HEGIS for policy making and for defining difficulties they had encountered in compiling the information for HEGIS or in using HEGIS data. They allowed themselves to be probed for ideas about HEGIS; they suggested sources of data; they identified important and recent pieces of literature using HEGIS, particularly in the affirmative action area. The interviews were informative and enjoyable.

Among these interviewees were the following: John Augenblick, Education Finance Center; Marie Baez, Stanford University; Curtis Baker, NCES; Dick Beazley, NCES; Dick Berry, National Science Foundation; Howard Bowen, Claremont Graduate School; Norm Brandt, NCES; David Brennan, Brookings Institute; Bob Brown, Bureau of Labor Statistics; Rozzelle Bruno, Census Bureau; Marine Buma, Stanford University; Bob Calvert, NCES; Pamela Christoffel, College Board; Douglas Collier, National Center for Higher Education Management Systems; Susan Cote, Massachusetts Institute of Technology; Ken Creighton, Stanford University; Tlich Cruza, Massachusetts State Board of Education; James Culliston, Massachusetts Institute of Technology; Nathan Dickmeyer, ACE; Jonathan Dorfman, NCES; Nadine Edeles, NCES; Lee Eiden, NCES; Virginia Fadil, National Association of Independent Colleges and Universities; Paul A. Falkner, University of California at Los Angeles; Don Finley, Virginia Legislative Analyst; Bruce Fleming, Black Concerns Staff, Department of Education; John Folger, Education Commission of the States; Patsy Foster, University of California at Berkeley; Carol Frances, ACE; William Gescheider, Department of Education; Fontelle Gilbert, American Association of Community and Junior Colleges; Kevin Gilmartin, American Institute for Research; Larry Gadieux, College Board; Lyman Glenny, University of California at Berkeley; Robert

Houghton, Stanford University; Helena Howell, Department of Education; James Hyatt, National Association of College and University Business Offices; Gregg Jackson, Harvard University; Pauline Knapper, ACE; Laurence Kojaku, SUNY at Buffalo; Martin Kramer, Carnegie Council on Higher Education; Eric Kurtz, Harvard University; Freddie Lieberman, Department of Education; Margaret Loeb, Massachusetts Institute of Technology; Jay Lucker, Massachusetts Institute of Technology; Sally Machoney, Stanford University; Lewis Mayhew, Stanford University; Jim McLain, Virginia State Council of Higher Education; Marilyn McCoy, National Center for Higher Education Management Systems; Don McLaughlin, American Institute for Research; Paul Mertins, NCES; Jim Mingle, Southern Regional Educational Board; John Minter, John Minter Associates; Fred Moon, Pomona College; Jim Moore, U.S. Office of Education; Jim Morgan, State University System of Florida; J. Michael Mullen, Virginia Council of Higher Education; Michael Olivas, LULAC; Jeff Paton, Stanford University; Andy Pepin, NCES; Kent Peterson, Stanford University; Michael Pilot, Bureau of Labor Statistics; Art Podolsky, NCES; Martha Robinson, Virginia State Council of Higher Education; Janet Rule, University of California at Berkeley; Jane Ryland, SHEEO; Bob Schultz, Virginia State Council of Higher Education; Jane Skettle, Boston University; Dave Spencer, SREB; Caroline Smith, NCES; Stan Smith, NCES; Verne Stadtman, Carnegie Council of Higher Education; Jessy Ulin, Department of Education; John Van Zine, National Occupational Information Coordinating Committee; Valerie Veronin, Stanford University; Betty Ward, Department of Education; Walter Webb, National Occupational Information Coordinating Committee; Richard Wilson, American Association of Community and Junior Colleges; Charles Woodman, Boston University; and Bob Yuill, NCES.

The project was also well served by Mary Carrington of the American Council of Education who supplied reports and library services without complaint; there must have been times when she wished the HEGIS folk would find someone else from whom to request publications. D. F. Finn, executive vice president of NACUBO, added the principal investigator to the organization's distribution list for publications, thereby significantly reducing search time for many reports.

The list of folk in higher education who helped on this project could go on and on; some are unknown by name, their input supplied during coffee breaks at conferences or in responses to pilot tests and instruments. Nor does the list of helpers on this project include those who provided secondary data for the project by completing a survey questionnaire that Ms. Audrey Cain used in a study of her own. These data, which Ms. Cain collected and supplied freely to the project, provided significant information about the uses of HEGIS. Like members of the project team, she too found the higher education community interested in the study and willing to supply data for an analysis of the contributions of HEGIS to the study of higher education and what might be done to improve its accuracy.

The project team included the following: Dawn Green, Everlena Holmes and Juanita Clinkscales played a major part in reviewing the literature, annotating many of the publications reported in the final review of literature. Mary Tilbury and Linda Fernandez supervised the statistical sampling of the literature and the coding of the data from the sample. Drs. Debbie Floyd, Gretchen Naff, Gerald McLaughlin, Robert Sullins and Charles Atwell conducted several personal and many telephone interviews. Drs. McLaughlin, Al Bloom and Larry Broomall participated extensively as consultants on the design and interview schedules. However, all of this work would have come to naught if it had not been for the editorial services of Dave Gangel, Linda Phillips, Dottie McIntyre, Dawn Green, Carole Salmon, Susan Gillikin, Nina Thayer, and Mary Tilbury. They were served well by such typists as Carol Stables, Janet Giles, Linda Bachelder, and Beth Burch and her staff. Others who participated in the latter stages of the study were Sandra Anderson, Carolyn Robinson, and Carlinda Edgeworth.

TABLE OF CONTENTS

Page

EXECUTIVE SUMMARY iii

Acknowledgements xvi

CHAPTER I 1
INTRODUCTION 1
Organization of the Report 4
HIGHER EDUCATION HISTORICAL BACKGROUND OVER THE PAST THIRTY YEARS RELATED TO HEGIS 4
Overview 4
Higher Education in the Mid- and Late 1960's . . . 5
HEGIS--Early Critiques 7
Higher Education in the 1970's Impact on Uses of HEGIS 8
HEGIS SURVEYS 8
Description of Surveys 10
EVALUATION OF HEGIS 11
METHODOLOGY 11
Literature Review 14
Interview and Survey Instruments-- Development and Design 14
Interviews 16
Survey Sampling Plan 16

CHAPTER II 21
FINDINGS FROM THE REVIEW OF THE LITERATURE 21
Introduction 23
FINDINGS FROM THE CONVENTIONAL REVIEW 23
Uses for Developing Policy Recommendations 24
Reporting on the Condition of Higher Education . . 26
Institutional Characteristics 26
Financial Analysis of the Conditions of Higher Education 26
Less Sophisticated Uses of HEGIS in Describing the Conditions of Higher Education 32
On the Condition of Women and Minorities in Higher Education 34
Black Higher Education 36
The Uses of HEGIS by the Popular Media 36
Uses of HEGIS by Government 38
FINDINGS FROM THE STATISTICAL ANALYSIS OF THE LITERATURE 42

Page

Sampling the Literature 42
Findings 43
Consumer Awareness/Acceptance of HEGIS Data 43
Time Lag Between HEGIS Data Collection/ Availability 44
Major Publications Using HEGIS Data 44
The Lag Between Production/Referencing of Sources . 45
SUMMARIES OF FINDINGS 57
WHY HEGIS DATA ARE USED 57
INSTITUTIONAL CHARACTERISTICS SURVEY 59
DEGREES CONFERRED 60
OPENING FALL ENROLLMENT 61
RESIDENCE AND MIGRATION 62
FACULTY EMPLOYEE DATA 63
NON-FACULTY EMPLOYEE DATA 64
FINANCE 65
LIBRARIES 66
FACILITIES 67
ADULT & CONTINUING EDUCATION 68
SUMMARIES OF FINDINGS 69

CHAPTER III 71
FINDINGS FROM THE PERSONAL INTERVIEWS 71
Overview 73
INSTITUTIONAL CHARACTERISTICS 74
FALL ENROLLMENT AND COMPLIANCE SURVEYS BY FIELD, SEX AND ETHNIC GROUP 75
Problems 76
RESIDENT AND MIGRATION DATA 77
Problems 77
DEGREES AND OTHER AWARDS CONFERRED 78
Problems 78
FACULTY AND STAFF 79
Problems 80
FINANCIAL STATISTICS 81
Problems 81
LIBRARIES AND FACILITIES 82
ADULT AND CONTINUING EDUCATION 83
OVERVIEW OF FINDINGS FROM INTERVIEWS ON THE USES OF HEGIS DATA 83
Influence on Public Policy 83
Quality of HEGIS Data 85
Accuracy of HEGIS Data 86
The Politics of Comparisons with Other Institutions 87
More HEGIS Needed? 88
Burden on Institutions and Other Matters Related to Collection 89
Universe vs. Sample Data 90
Accessibility of HEGIS Data: How Can the Uses of HEGIS Be Improved? 92

Page

CHAPTER IV 93
FINDINGS FROM SURVEY OF INSTITUTIONS, HIGHER EDUCATION INSTITUTIONS, STATE AGENCIES AND KNOWN USERS 93
        Introduction 95
    FINDINGS FROM SURVEY OF INSTITUTIONS AND HIGHER EDUCATION STATE AGENCIES 95
        Frequency of Use 95
        Types of Use 100
        Purposes in Using HEGIS Data 100
        Comparisons of Users by Use 103
        Use of Merged Data Bases 105
        Respondents' Ratings of the Quality of HEGIS Data 106
        Universe vs. Sample Surveys 108
        Frequency of HEGIS Data Collection 108
    FINDINGS FROM SURVEY OF KNOWN USERS 108
        Purposes for Using HEGIS Data 113
        Uses by Types of Organizations 115
        Criticisms and Suggestions 117
        Student Characteristics 119
        Technical Evaluation of HEGIS 119
        Other Data Bases 122
        Reasons for Using Data Bases Other Than HEGIS . . 122
        Major Strengths 122
        Major Weaknesses 122
        General Comments 123

CHAPTER V 125
WHO USES HEGIS DATA FOR WHAT PURPOSE, CONCLUSIONS AND RECOMMENDATIONS 125
        Introduction 127
    METHODOLOGY 127
        Literature Review 128
        Interviews 128
        Survey 129
    FINDINGS 129
        Dissemination 131
        Additional Data Wanted 132
    CONCLUSIONS 132
    RECOMMENDATIONS 137
        First Priority Recommendations 137
        Second Priority Recommendations 141
        Recommendations of the Technical Advisory Panel. . 142

BIBLIOGRAPHY Bib-1

APPENDICES

LIST OF APPENDICES

Appendix		Page
A	Panel Members	A-1
B	Questionnaire of Known Purchasers	B-1
C	Questionnaire for Survey of Random Selection of Higher Education Institutions and Agencies . . .	C-1
D	Interview Guide	D-1
E	List of Interviewees	E-1
F	List of Tape Purchasers	F-1

LIST OF TABLES

Table Page

1.1 History of Major Postsecondary Education Surveys Distributed by the National Center for Education Statistics (NCES) 9
1.2 List of Selected NCES Publication Reporting Results of HEGIS Surveys 12
1.3 HEGIS Computer Tapes 13
1.4 States and Types of Institutions 19
1.5 Characteristics of the Sample by State Cluster Size Stratum 20

2.1 Purposes for Which HEGIS Data are Used by Groups Utilizing HEGIS Data 58
2.2 Summary of Reported Use of HEGIS Data by Various Users to Report/Analyze Institutional Characteristics 59
2.3 Summary of Use of HEGIS Data by Various Users to Report/Analyze Degrees Conferred 60
2.4 Summary of Use of HEGIS Data by Various Users to Report/Analyze Opening Fall Enrollment 61
2.5 Summary of Use of HEGIS Data by Various Users to Report/Analyze Residence and Migration 62
2.6 Summary of Use of HEGIS Data by Various Users to Report/Analyze Faculty Employee Data 63
2.7 Summary of Use of HEGIS Data by Various Users to Report/Analyze Non-Faculty Employee Data 64
2.8 Summary of Use of HEGIS Data by Various Users to Report/Analyze Finance 65
2.9 Summary of Use of HEGIS Data by Various Users to Report/Analyze Libraries 66
2.10 Summary of Use of HEGIS Data by Various Users to Report/Analyze Facilities 67
2.11 Summary of Use of HEGIS Data by Various Users to Report/Analyze Adult & Continuing Education . . . 68

4.1 Uses of Various Surveys 99
4.2 Types of Uses 101
4.3 Purposes - Policy Making 102
4.4 Purposes - Management 104
4.5 Ratings of HEGIS Quality 107
4.6 Preferences on Universe vs Sample Data 109
4.7 Frequency of Data Collection 110
4.8 HEGIS Tapes Purchases, January, 1978 through August, 1979 (N = 498) 112

Table Page

4.9 Rank Order List of Purposes for Using HEGIS Data 114
4.10 Uses of HEGIS Data Rank Ordered Within Groups by Purpose 116
4.11 Response to Questions Concerning Criticism and Suggestions for Improving the Collection of HEGIS Data 118
4.12 Questions and Responses Concerning HEGIS Data Tapes 120

LIST OF FIGURES

Figure Page

2.1 Typical Use of HEGIS Data 33
2.2 Financing Postsecondary Education: Where Does the Money Come From? 39
2.3 Revenues to Postsecondary Education 40
2.4 Distribution of Racial and Ethnic Minorities Enrollment in Ph.D. Granting Institutions, Fall, 1973 41
2.5 Percentage of Publications Using HEGIS Data to Report Institutional Characteristics 46
2.6 Percentage of Publications Using HEGIS Data to Report Degrees Conferred 47
2.7 Percentage of Publications Using HEGIS Data to Report Fall Enrollment 48
2.8 Percentage of Publications Using HEGIS Data to Report Residence and Migration 49
2.9 Percentage of Publications Using HEGIS Data to Report Faculty and Employee Data 50
2.10 Percentage of Publications Using HEGIS Data to Report Staff Employee Data 51
2.11 Percentage of Publications Using HEGIS Data to Report Finance Information 52
2.12 Percentage of Publications Using HEGIS Data to Report Library Data 53
2.13 Percentage of Publications Using HEGIS Data to Report Facilities 54
2.14 Percentage of Publications Using HEGIS Data to Report Adult/Continuing Education 55
2.15 Percentage of Publications Sampled Using HEGIS Data to Report on Vocational/Technical Education . . 56

4.1 Percentages of General Survey Respondents Reporting Use of Various Types of HEGIS Information (N = 109) 96

CHAPTER I

INTRODUCTION

This is the final report on a Study to Determine the Uses of the Higher Education General Information Survey (HEGIS) for the purpose of answering the following questions:

1. What is the extent to which HEGIS data are or could be used by members of the higher education community--federal agencies and Congress, state agencies and legislatures, professional associations, scholars, institutions, disciplines, manpower planners, economists, associations of business, industry and labor, and popular media? What is the nature of the use? How are they used? Who do you know that uses HEGIS data? How do they use it? How often do you discuss the use of HEGIS data?

2. Do institutions compare their status with that of others by using HEGIS data? Do they use enrollment projections and/or degrees conferred in making decisions concerning programs? Do state legislatures or governing boards use HEGIS data for other comparative purposes?

3. To what extent are universe data required? Are data on a single institution sometimes used for comparative purposes? To what extent is such use important? How should the data be aggregated? Does the HEGIS taxonomy of institutions need further refinement?

4. Would changes in the format of the data result in greater utilization? What changes are suggested? For example, would it be useful if certain ratios were developed and reported by HEGIS? How should the data be published and distributed? To what extent are tapes being used? Are there difficulties with the format of the tapes that could be corrected?

5. How serious are the concerns about the accuracy and timeliness of the data? Would the data be more useful if made available in publications or on tape three months earlier; six months earlier? Naturally such estimates will be crude and biased; however, they will provide a necessary basis for NCES to investigate costs in relationship to benefits resulting from acquisition and publication.

Data for answering these questions were gathered using three different methodologies. First, the literature was examined in considerable detail to determine who uses HEGIS data and for what purposes. This review utilized two different types of data gathering and reporting: 1) Key works on higher education were examined to determine trends and uses of HEGIS in reporting on the Condition of Higher Education and/or for developing policy for Higher Education; 2) A statistical sample of that literature, both within and outside the field of higher education (but likely to report on higher education) was reviewed for its uses of HEGIS data. The results of these reviews are reported in Chapter II.

Second, approximately 75 users, potential users, and/or experts in the field of higher education were interviewed. The procedures followed in conducting these interviews and the findings from the interviews are reported in Chapter III.

Third, two lists of known or potential users were developed. One list of users came from a review of the literature, an analysis of requests received by the National Center for Education Statistics (NCES), suggestions of experts in the field of higher education, including the staff of NCES. The second list of potential users was drawn at random from a list of the 50 states and institutions within the selected states, using a design described later in this chapter. These samples were used to augment samples used by Ms. Audry Cain in her data collection effort to obtain information from these users or potential users of HEGIS data. The findings from these surveys are reported in Chapter IV.

This report is the final product of the analysis of data from the several sources, using many different instruments and research techniques.

Organization of the Report

This report consists of five chapters and several appendices. The first chapter includes a summary of the history related to the development and use of HEGIS data and an extensive overview of the methodology that was followed in conducting this study. The second chapter deals with the review of literature from a traditional and statistical approach. The third chapter relates to the findings of the interviews with selected scholars who use HEGIS data. Chapter IV covers the findings and statistical analyses of the surveys. The fifth chapter includes the conclusions and recommendations drawn from the findings. The bibliography is a tightly selected listing of publications of particular value. Not included is an annotated bibliography, which was published earlier. The appendices include such supporting documentation as listings of panel members, interviewees, the interview guide, general questionnaire, special questionnaire, sample of institutions, and frequency results of the general questionnaire.

HIGHER EDUCATION HISTORICAL BACKGROUND OVER THE PAST THIRTY YEARS RELATING TO HEGIS

Overview

The importance of collecting data on enrollment in higher education on a regular basis was recognized early, and the implementation of processes for collecting such statistics routinely was begun in 1950. However, the collection of other data on a routine basis was not initiated until 1966 after passage of the Higher Education Act of 1965. At that time it was clear that higher education was a growth industry, already involving 596,400 faculty and serving 5,526,325 students. By 1979, faculty had increased to 985,000 and students to 11,669,429.*

Higher Education in the Mid- and Late-1960s

The character and problems of higher education have changed since 1965. In 1965, society's and the individual institution's problem was a matter of undercapacity--finding the faculty and space to serve an ever-increasing number of students and their aspirations for higher education. During that time state and federal funding for research and instruction was relatively plentiful. There was a strong belief that both society and the individual benefited from investment in higher education. Compared to today's rates, inflation was low; energy was plentiful. Society was optimistic about the future of the country, the benefits of basic and applied research, and the need and place for highly educated manpower. There was not quite as much awareness of using "manpower" and "he" in reports, although single-sex colleges and/or departments in universities were gradually becoming less popular, and female enrollment was beginning to approximate that of male enrollment. The higher education market (a term that was an anathema in the enterprise until the late 1970s) was still composed of the traditional-age student (someone fairly bright, 18 to 24 years of age, and generally white). Few in higher education had much time to give significant thought to the basic unfairness in the funding of male and female faculty salaries. Despite long delayed recognition that blacks and other minorities must be brought into the mainstream of American life, affirmative action programs were minimal. The battleground against racism was still primarily in the streets, restrooms, buses, and K-12 schools. The battle against sexism and discrimination against the handicapped had not yet been joined.

The emphasis in 1965 was on finding money for buildings to house students and faculty, on recruiting and upgrading faculty to teach students, and to do research. Experimentation with new types of programs and schools occurred in 1965 and the years immediately following. Community colleges expanded in size and number, and many two-year schools found their mission changed significantly. Junior colleges added vocational-technical programs, and vocational-technical schools added transfer programs. Both junior colleges and vocational-technical schools became comprehensive community colleges. It is said that by 1969,one new community college was being opened each week.

---

*1979 figures obtained from NCES. "Faculty" includes full- and part-time instructional and junior instructional staff.

The role of many existing senior institutions also was being changed by the pressures of public demand for higher educational opportunity. Normal schools or teacher colleges found their missions upgraded to comprehensive colleges or universities and more and more state universities found an opportunity to become research-oriented. Graduate programs in all disciplines proliferated.

This growth, change in mission, and urge to experiment with new forms of instruction, governance, organization, and the design of facilities occurred in an environment in which students and faculty were becoming increasingly aware of what they perceived as their rights in governance, but in which management per se was not a notable practice. For example, the Society for College and University Planning in the late sixties was dominated by architects and facility planners. Its agenda in convention was dominated by planning of facilities, not on marketing (with all that entails in terms of product, pricing, goal setting, and organization) or on academic and financial planning--that is, where are and where should the dollars and other resources be going and for what purposes?

Only the larger colleges and universities had designated offices of institutional research, and the emphasis of these offices was on the collection of data on student and faculty characteristics. Little, if any, attention was given to the implications of what such data might mean in regard to goal setting; the allocation of resources; long-range planning for faculty renewal, retirement policies and tenure; and what might be the impact of declining birthrates for higher education in the 1970s and 1980s.

These were the conditions that existed when the Higher Education General Information Survey (HEGIS) began to collect data about faculty, finances, facilities, libraries, etc. from more than 2,200 institutions. This was a major undertaking since many, perhaps the majority, of the institutions had minimal systems for keeping track either of students or finances. The state of the art in the systematic management of higher education was not well advanced. Financial systems were aimed primarily at maintaining fiduciary accountability and satisfying generally unsophisticated legislative requests for data to support budget proposals. For example, it was not until 1967 that George Weathersby proposed a systematic way of planning for faculty and other resources using simulation techniques. This computer-driven model was the prototype for the Western Interstate Commission for Higher Education (WICHE) Resource Requirements Prediction Model, later promoted and evaluated by the National Center for Higher Education Management Systems (NCHEMS).

This model and others like it (for example, CAMPUS and SEARCH) focused attention both on needs and methods for collecting historical data on costs, enrollments, and facilities while generating criticism for the expense, complexity, and over-emphasis on systems at the expense of the nuances of the "functions of higher education" (Balderston, 1974).*

These criticisms have led to the development of less complex versions of the RRPM (Huff, 1974) and later models that emphasize evaluation and justification for allocating resources within budget constraints (for example, Lewis, 1976). However, almost all of the models are organized around the general concepts of the HEGIS data base and the NCHEMS program classification schema and cost-finding principles.

HEGIS--Early Critiques

However, simulation models, cost-finding principles, and critical analyses of costs by state agencies for governing and coordinating higher education and legislative analysts were not in place in the late 1960s when HEGIS was initiated. At that time few higher education institutions generally used computers for compiling and analyzing data on students and finances. As late as 1972, many major institutions of higher education often used groups of students to classify raw data on enrollment to fit HEGIS definitions. In the early years of HEGIS, there was good reason for suspicion about the reliability of the data, particularly since the definitions of data (at least in respect to financial reporting) were not highly stable. In the early symposia on HEGIS, sponsored by NCES, critiques of HEGIS generally focused on reliability, computer-tape formats and documentation, and late release of tapes and publications after the data were collected.

In later symposia, concern about reliability and accuracy has been displaced slightly by increased emphasis on the late publication of survey results (quite often two years after data collection) and also on the late dissemination of machine data by computer tape or EDSTAT. (Presently, this process requires six months or longer for preliminary results.) By 1978, NCES was being pushed (Parker et al., 1978) to collect more data on such groups as minorities, women and the handicapped. Yet, timeliness of release was seen as first priority, "even at some cost to quality or completeness" (p. 7).

---

*Frederick E. Balderston, Institutional data systems, in Managing Today's University (San Francisco: Jossey Bass, Inc., 1974). Cited by Carl R. Adams, Russell L. Hanbum and Roger G. Schroeder in a study of cost analysis in higher education, Volume 1: The literature of cost and cost analysis in higher education (Washington, D.C.: American Council on Higher Education). This work is an encyclopedia of the development of higher education costing.

Higher Education in the 1970s Impact on Uses of HEGIS

Improved perceptions about the usability of HEGIS data occurred in 1972. That year Seymour Harris developed A Statistical Report of Higher Education. This massive Carnegie report described higher education in terms of enrollments, finances, faculty salaries, student aid, tuition, research funding, physical plant, etc. The report drew heavily from 1968 HEGIS data as well as from studies by the Bureau of Census, American Council of Education, the Office of Education, and the National Science Foundation. The document disclosed that HEGIS and data from other sources could provide a statistical description of higher education. At the same time, it was becoming increasingly apparent that the problems of higher education had changed from what they were in 1965 or even as late as 1970. United States' society was no longer as optimistic about the government's ability to control events or about its own ability to control the government. The Vietnam war and student riots at major universities created new concerns for educators. Major sections of cities were being ripped and burned. The decline in the birth rate and the declining impact of the baby boom of the 1940s and 1950s could no longer be ignored in an evaluation of higher education's prospects. It was becoming increasingly clear that the institutions of education were no longer faced with the problem of building capacity to meet the increasing demand of students for higher education. There was increasing pessimism, perhaps misplaced, about the value of higher education either to the individual or society. One could read, if one wanted to, that the impetus for questioning government actions, societal values, and riots had come from the higher education community. Berkeley came before Watts. The leaders of the Selma march and the students who traveled to Mississippi to disrupt the status quo were from colleges and universities. Moreover, higher education no longer appeared to guarantee a good position in society. Caroline Bird (1975), among others, questioned whether an individual's benefit from higher education was worth the investment. One could infer, as many did, from Jenck and Reisman (1968), that higher education did not make a difference in what one ultimately earned or the position one gained in society.

HEGIS SURVEYS

HEGIS includes a series of periodic surveys of colleges and universities. Some surveys, such as enrollment, degrees conferred, institutional characteristics, and the financial statistics forms are sent every year to all institutions receiving federal funds. Other surveys, such as the employee facilities, and the library, are sent at various intervals. Today, the HEGIS package includes ten forms--those forms mentioned above as well as the residence/migration forms, and the adult/continuing education survey (see Table 1.1).

Table 1.1

HISTORY OF MAJOR POSTSECONDARY EDUCATION SURVEYS DISTRIBUTED BY THE NATIONAL CENTER FOR EDUCATION STATISTICS (NCES)

Actual 1966-67 through 1978-79 and Scheduled 1979-80 through 1983-84

Survey Name	Form Number	Actual													Scheduled				
		I 1966-67	II 1967-68	III 1968-69	IV 1969-70	V 1970-71	VI 1971-72	VII 1972-73	VIII 1973-74	IX 1974-75	X 1975-76	XI 1976-77	XII 1977-78	XIII 1978-79	XIV 1979-80	XV 1980-81	XVI 1981-82	XVII 1982-83	XVIII 1983-84
NCES Surveys of Institutions--Higher Education General Information Survey (HEGIS)																			
Institutional Characteristics	2300.1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Degrees Conferred	2300.2.1	X	X	X	X	X	X	X	X	X	X	X*	X*	X	X*	X	X*	X	X*
Fall Enrollment/Compliance	2300.2.3	X	X	X	X	X	X	X	X	X	X	X*	X	X*	X	X*	X	X*	X
Residence/Migration	2300.2.8			X				X			X				X		X		X
Enrollment by Field	2300.2.9	X	X	X	X	X	X	X	X	X	X	X	Discontinued						
Employees:																			
Total Employees (including Faculty)	2300.3						X	X				X							
FT Instructional Faculty	2300.3	X	X	X	X	X				X	X		X**	X**	X**	X**	X**	X**	X**
Financial Statistics	2300.4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Libraries	2300.5	X	X	X	X		X		X		X	X	X		X		X		X
Enrollment Projections	2300.6	X	X	X	Discontinued														
Facilities	2300.7	X		X	X	X	X			X				Study†		X			
Adult/Continuing Education	2300.8			Sample			Sample					Sample		Sample		Sample		Sample	

Source: NCES

Note: This history summarizes the years that the forms with the number and name indicated were distributed. It does not necessarily mean that the forms were consistent in structure or definition.

*Racial information required. (Form will stay the same, with racial areas shaded in years racial data not required. Thus racial information can be filled in and collected at the state level if desired.) Racial data are being collected for the Office of Civil Rights (OCR) which had collected the data previously on separate forms.

**NCES agreed to collect information on salaries for continuing faculty that had previously been collected by the American Association of University Professors (AAUP). NCES also agreed to publish faculty-salary information annually.

†NCES will be modifying the Inventory of College and University Facilities to collect information for the Office of Civil Rights (OCR) regarding accessibility to higher-education facilities for mobility-impaired students. A feasibility study of 700 institutions was conducted in 1978-79, and all institutions will be surveyed in 1980-81.

Description of Surveys

Data on student enrollment had been collected for nearly 20 years before the initiation of HEGIS. Today, the survey includes information concerning enrollments by class level, sex, attendance status, and enrollments of first-time students. Every year these data are published in Opening Fall Enrollment.

The Financial Statistics of Institutions of Higher Education survey acquires data on current-funds revenues and expenditures, physical plant assets, indebtedness on physical plant, and endowment. In 1975 the survey began gathering data on transfers from current funds and on changes in fund balances during the fiscal years. The data are often used to detect emerging trends in higher education finance in order to develop plans for future financial management.

The Institutional Characteristics of Colleges and Universities survey obtains information on such characteristics as type and control of institutions, level of offering, type of program, accreditation, basic student charges, and names of principal officers.

The Degrees and Other Formal Awards Conferred, also an annual survey, gathers data on earned degrees and awards in institutions of higher education in sub-baccalaureate, baccalaureate, master's and doctoral programs.

The Employees in Higher Education survey has two sections: salaries and fringe benefits are obtained annually; manpower information is acquired biennially. This survey obtains data on the numbers of professional employees by occupational activity and program function, numbers of non-professional employees, salaries of administrators and instructional faculty, and fringe benefits of faculty members. The annual survey to obtain data on faculty is used by the American Association of University Professors as the basic source of data for its annual report on faculty salaries, a widely read report.

The College and University Physical Facilities survey obtains data on the number of square feet of physical-plant space available for each institution in terms of rooms, function of rooms, and organizational unit to which rooms are arranged. These data are often used by the Public Health Service and Housing and Urban Development in housing planning.

The Residence and Migration of College Students survey of enrollment by state of residence was conducted as early as 1958 but was not incorporated into the HEGIS package until 1968.

The College and University Libraries survey is conducted periodically and gathers information on library holdings, staff, expenditures, physical facilities, days open per week, and membership in library cooperatives, consortia, and networks. The survey was originally conducted by the Association of College and Research Libraries but from 1958 to 1974 was conducted by the Office of Education.

The Adult and Continuing Education in Institutions of Higher Education survey seeks data on noncredit and credit courses taken by adults part-time and is used in planning educational programs.

After the results of these surveys are edited, they are published in such documents as those listed in Table 1.2; compiled on computer tapes (see Table 1.3), which may be purchased or accessed through EDSTAT; and such other publications as the Digest of Education Statistics, news releases, flyers, and the annual report on the Condition of Higher Education.

EVALUATION OF HEGIS

From 1966 to the present, NCES has conducted HEGIS conferences to seek out recommendations and evaluations of the HEGIS data. Components of the higher education community such as the institutions themselves, professional organizations, various educational associations, and governmental departments have participated in these conferences in order to assist in the development of HEGIS surveys. The issues raised in these conferences concerning collection, analysis, and dissemination of HEGIS data are discussed in Chapter II.

The Educational Amendments of 1974 transferred NCES from the Office of Education into the Office of the Assistant Secretary for Education. The legislation requires that NCES submit to the Congress an annual statistical report for the two preceding and three succeeding fiscal years. Since 1974, NCES has moved beyond the collection of basic education data into a broader realm of examining the conditions of education.

Today the HEGIS system, as a whole, is intended to provide a national data bank on enrollment, institutional and other characteristics of higher education institutions for use by scholars, policy analysts in and outside government, and the media in reporting or analyzing the condition of higher education. It is the intent of this study to determine the extent of use of HEGIS by these potential users.

METHODOLOGY

The purpose of the study of the uses of HEGIS data was to determine the extent and nature of the utilization of HEGIS data. A preliminary review of literature provided a baseline for the development of instruments and the selection of samples of the population to be queried about the uses of HEGIS.

Table 1.2

List of Selected NCES Publications Reporting Results of HEGIS Surveys

Survey of Characteristics of Students in Noncollegiate Postsecondary Schools.

Selected Statistics on the Salary, Tenure, and fringe benefits of Full-Time Instructional Faculty for the 1978-79 Academic Year

Financial Statistics of College and Universities

Digest of Education Statistics

Condition of Education, 1979 Edition, Statistical Report

Education in the United States: Statistical Highlights through 1977-78

Earned Degrees Conferred

Traditionally Black Institutions of Higher Education: Their Identification and Selected Characteristics

Degree Awards to Women: An Update

The Impact of Section 504 of the Rehabilitation Act of 1973 on American Colleges and Universities, Preliminary Summary Report

Financial Statistics of Institutions of Higher Education

Fall Enrollment in Higher Education

Migration of College Students

Women in Vocational Education

Noncredit Activities in Institutions of Higher Education

Enrollments and Programs in Noncollegiate Postsecondary Schools

Learning a Skill Through Correspondence

Issues in Postsecondary Education: Financial Viability of Institutions

Education Directory, Colleges and Universities

Directory of Postsecondary Schools with Occupational Programs

Programs and Schools--A Supplement to the Directory of Postsecondary Schools with Occupational Programs

Institutions of Higher Education: Index by State and Congressional District

Education Directory, Public School Systems

College and Universities Offering Accredited Programs by Accreditation Field, Including Selected Characteristics

Inventory of Physical Facilities in Institutions of Higher Education

Students Enrolled for Advanced Degrees, Summary Data

Upper Division Enrollment by Degree Field, Summary Data

Library Statistics of Colleges and Universities, Institutional Data

1976 Survey of 1974-75 College Graduates

Adult Basic and Secondary Program Statistics, Students and Staff Data and Selected Summaries

Participation in Adult Education

Financial Statistics of Institutions of Higher Education, State Data

Federal Policy Issues and Data Needs in Postsecondary Education

Associate Degrees and Other Formal Awards Below the Baccalaureate, Summary Data

Barriers to Women's Participation in Postsecondary Education: A Review of Research and Commentary

Trend Analysis of Associate Degrees

Adult Basic and Secondary Education, Program Statistics

Table 1.3, HEGIS Computer Tapes

Survey Types		Survey Years	
Abbreviation*	Short Title of Survey	Year Designator	Year
OFE	Opening Fall Enrollment	I	1966-67 and on
ERD	Degrees Conferred	II	1967-68 and on
DIR	Institutional Characteristics	III	1968-69
EMP	Employees	IV	1969-70
RM	Residence/Migration	V	1970-71
FIN	Financial Status	VI	1971-72
LIB	Libraries	VII	1972-73
FAC	Facilities	VIII	1973-74
Ad. D	Upper Division and Post Baccalaureate Enrollment (Enrollment by Field)	IX	1974-75
		X	1975-76
		XI	1976-77
		XII	1977-78
		XIII	1978-79

*For example, the designator for Opening Fall Enrollment, 1978-79 would be OFE XIII; for Libraries LIB XI.

One of the primary purposes of the HEGIS user study was to identify the degree to which HEGIS is used and by whom. More specifically, the study was designed to answer the questions set forth earlier.

As already stated, the study entailed reviewing the literature, surveying two classes of users or potential users, and interviewing many users of HEGIS and experts in the field of higher education.

Literature Review

The review of the literature, the first phase of the study, was to provide: (1) an estimate of the uses of HEGIS data for various purposes in the literature, (2) guidelines for developing interview guides and survey instruments for determining uses that do not appear in conventional bodies of literature, and (3) answers to the research questions set forth earlier.

Who uses HEGIS in the literature and for what purpose are important questions for two reasons: (1) literature provides for a general dissemination of information on the state of higher education, and (2) suggests ways to researchers in how various sets of data can be used in analysis of higher education agencies and institutions.

Two approaches were taken in reviewing the literature: (1) a conventional search and review of literature to discern--through reading and analysis--uses, users, and purposes; and (2), a statistical survey of the literature, using selected descriptors to permit classification of the literature in terms of trends and uses.

The conventional search and review included what appeared to be the most important works in higher education that were likely to use HEGIS data. The statistical survey of the literature involved a computer assisted search of the ERIC and other data files using selected descriptors to identify HEGIS related data and a systematic search of card catalogs, published annotations, bibliographies, general texts on education, selected conference abstracts and foundation reports, popular media sources, and scholarly papers. These approaches are described more fully in Chapter II where the findings from the literature appear.

Interview and Survey Instruments--Development and Design

The review of literature and conferences with users and suppliers of HEGIS data suggested that users might be classified as follows: (1) Federal Government. This includes federal agencies such as the Office of Education, NCES, the Office of Civil Rights, the Bureau of

Labor Statistics, the Census Bureau, and Congress; (2) Quasi-governmental organizations such as RAND, the National Center for Higher Education Management Systems, and the Brookings Institute; (3) Accreditation Agencies and Regional Boards; (4) Educational Associations; (5) Professional Organizations; (6) Foundations; (7) State Governments. This includes departments of education, budget offices, higher education government boards of councils, and legislative analysts; (8) Higher Education Institutions. The offices in these institutions would include planning and institutional research, budget, affirmative action, admissions, library, and physical plant planning, etc. Generally these offices prepare reports for trustees, state agencies, and the legislature; (9) Scholars: (10) Commercial or Business Houses; and (11) the Popular Media.

While a review of the literature uncovered many of the uses by the above, it did not discover uses that are not generally disseminated; i.e., internal reports and evaluations. Because of the differences in users, it was necessary to design an interview guide, and to obtain information from state agencies and higher education institutions, and also from a small population of known purchasers of HEGIS data, namely schools, business houses, educational associations, etc.

The major guideline for designing these surveys was the research questions set forth earlier. However, the insights provided by the review of literature on uses and types of use, a pilot study of a state agency and legislative system, discussions with scholars and institutional research, provided important inputs for determining the concerns of the post-secondary community and interpreting the results of surveys. After the questionnaires were determined to meet the following criteria: adequacy for answering the research questions, ease of completion by the respondent, and construct validity, they were submitted--with a preliminary review of the literature--to a Technical Advisory Panel on the project, consisting of representatives from almost all those sectors of society that use HEGIS data. (See Appendix A for a list of panel members.) In a day-long meeting, this group critiqued the preliminary review of the literature, added research questions, suggested additional users of HEGIS, and otherwise provided input for revision of the instruments which were again tested.

As these tests were being completed, it came to the attention of the project that instruments very similar to the proposed project instruments were being used by an independent researcher, Ms. Audrey Cain. Ms. Cain agreed to permit the project to use her data and to augment her sampling design with the project's sample. (See Appendices B and C for examples of her questionnaires.) In the interests of economy and timeliness, the data gathered by Ms. Cain has been used in this study with the permission of Ms. Cain and the NCES project office.

Interviews

The technique that was followowied in the interviews is discussed in Chapter III, Findings from the Interviews. Appendix D contains a sample of the interview guide. As Appendix E shows, a large and diverse number of users of HEGIS data and of experts in the field of higher education were interviewed, representing institutional planners, financial officers, registrars, facility planners, librarians, scholars, educational associations, and legislative staff and, researchers.

Survey Sampling Plan

In the design of the sampling plan to determine the use of HEGIS data by state agencies and institutions of higher education, several considerations were made both in regard to variables across which the sample should be representative and in regard to the nature of the sample. Considerations concerning the nature of the sample focused upon four areas: scope, accuracy, utility, and use of frame construction. A simple random sample design was not deemed appropriate since this process would provide a scatter of subjects in every state; would present some difficulties in frame construction; and would make it more difficult to conduct survey follow-ups. A two-stage sample design was deemed the most appropriate since this design allowed: (1) for a selection of a first-stage sample of states in which the state departments can be surveyed; (2) for an easy method of frame selection using the HEGIS publication and ordering institutions by type (private, public, four-year, two-year) to obtain representative coverage of each type (see Table 1.4); (3) in-state follow-up of responses by telephone or in person, thus providing more control on sample return.

The two-stage cluster sample (see Table 1.5) was designed to be self-weighting, to select institutions randomly, and to provide a confidence bound of

$$\frac{\sum_{j=1}^{m_i} A_{ij}}{\sum_{j=1}^{m_i} m_{ij}}$$

which is the estimated proportion of the institutions with the ith stratum of the sample;
Then:

$$\hat{V}(\hat{p}) = \frac{1}{M_{..}^{2}}\left\{\left[\sum_{i=1}^{L}\left(M_{i.}\right)\left(M_{i..}-m_{i.}\right)\left(\frac{N_i-N_i}{N_i n_i \hat{p}_i^{2}}\right)\sum_{j=1}^{N_i}\frac{\left(a_{ij}-\hat{p}_i a_{i/j}^{2}\right)}{N_i-1}\right]+\left[\left(\frac{N_{.}-n}{N_{.}n_{.}}\right)\left(N_{.}-1\right)\sum_{j=1}^{L}\left(\frac{\left(M_{i.}\hat{p}_{i.}-M_{..}\hat{p}\right)^{2}}{L-1}\right)\right]\right\}$$

$$\hat{V}(\hat{p}) = \left\{\left[\left(\frac{1}{3125^{2}}\right)\left(548\right)\left(548-28\right)\left(\frac{2-2}{2.2.137^{2}}\right)\left(0.18\right)+\right.\right.$$

$$\left(738\right)\left(738-38\right)\left(\frac{5-3}{5.3.72^{2}}\right)\left(31.46\right)+$$

$$\left(661\right)\left(661-34\right)\left(\frac{8-3}{8.3.\overline{41}^{2}}\right)\left(31.84\right)+\left(619\right)\left(619-32\right)\left(\frac{11-3}{11.3.\overline{28}^{2}}\right)\left(28.54\right)+$$

$$\left.\left.\left(558\right)\left(558-28\right)\left(\frac{25-3}{25.3.11^{2}}\right)\left(22.58\right)\right]+\left[\left(\frac{51-14}{51.14}\right)\left(51-1\right)\left(6.39\right)\right]\right\}$$

$$\hat{V}\ (\hat{p}) = \frac{1}{3125^2} \left\{ \left[0 + 418.01 + 16.33 + 3206.58 + 16188.63 \right] + \left[16.56 \right] \right\}$$

$$\hat{V}\ (\hat{p}) = \frac{1}{3125^2}\ (19846.11)$$

$$\hat{V}\ (\hat{p}) = .0020$$

$$\hat{V}\ (\hat{p}) = .045$$

Bound on the error of estimation is .09.

Table 1.4

State	Stratum	Number of Institutions	Region	Public 4 Year	Public 2 Year	Private 4 Year	Private 2 Year
1. New York		286	1	40	42	165	39
2. California		262	5	31	106	116	9
3. Pennsylvania		178	1	23	38	107	10
4. Illinois		154	4	13	50	82	9
5. Texas		147	3	37	57	48	5
6. Ohio		133	4	14	48	67	7
7. North Carolina		126	3	16	57	34	19
8. Massachusetts		119	1	15	18	63	23
9. Michigan		96	4	15	30	43	8
10. Missouri		84	2	13	15	51	5
11. Florida		77	3	9	28	35	5
12. Tennessee		76	3	11	13	38	14
13. Georgia		72	3	17	17	27	11
14. Virginia		71	3	15	24	29	3
15. Indiana		66	4	13	11	36	6
16. Minnesota		65	4	10	20	31	4
17. New Jersey		63	1	14	17	27	5
18. Iowa		62	4	3	19	34	6
19. Wisconsin		62	4	13	17	29	3
20. South Carolina		61	3	12	21	20	8
21. Alabama		58	3	16	20	14	8
22. Maryland		54	2	13	19	20	2
23. Kansas		52	4	8	21	19	4
24. Washington		49	5	6	27	16	0
25. Connecticut		47	1	6	16	21	4
26. Mississippi		46	3	9	18	12	7
27. Oklahoma		43	2	14	15	10	4
28. Oregon		43	5	8	13	21	1
29. Kentucky		42	2	8	1	21	12
30. Colorado		41	5	13	14	13	1
31. Arkansas		34	3	10	9	10	5
32. Louisiana		32	3	14	6	11	1
33. Nebraska		31	4	7	10	13	1
34. West Virginia		28	2	12	5	8	3
35. Maine		27	1	7	3	14	3
36. New Hampshire		24	1	3	7	11	3
37. Arizona		23	5	3	14	5	1
38. Vermont		21	1	4	2	14	1
39. New Mexico		19	5	6	10	3	0
40. South Dakota		18	4	7	0	9	2
41. District of Columbia		16	2	1	0	15	0
42. Alaska		16	5	3	9	4	0
43. North Dakota		16	4	6	5	4	1
44. Utah		14	5	4	5	3	2
45. Rhode Island		13	1	2	1	9	1
46. Montana		13	5	6	3	4	0
47. Hawaii		12	5	3	6	3	0
48. Delaware		10	2	2	4	2	2
49. Idaho		9	5	4	2	2	1
50. Wyoming		8	5	1	7	0	0
51. Nevada		6	5	2	3	1	0
TOTAL		3125		542	923	1391	269

TABLE 1.5

Characteristics of the Sample by State Cluster Size Stratum

Stratum	Stratum Interval	No. of States	No. of Institutions	% of Stratum	State Fraction	State Sample	Institution Fraction	Institution Sample
1	200 and over	2	548	.1754	1.0000	2	.0512	28
2	120 to 200	5	738	.2362	.6000	3	.0853	38
3	66 to 120	8	661	.2115	.3750	3	.1365	34
4	45 to 66	11	619	.1981	.2727	3	.1877	32
5	under 45	25	558	.1786	.1200	3	.4267	28

CHAPTER II

FINDINGS FROM THE REVIEW OF THE LITERATURE

Introduction

The review of the literature was conducted using two very different methodologies. First, it was reviewed and reported conventionally. That is, the reviewers selected a body of major works in the field of higher education that had used or were deemed likely to have used HEGIS and then attempted to identify trends and developments in the use of the HEGIS. This review is reported in the first major section of this chapter. Second, a statistical sample of the literature from 1970 to 1980 was taken and an attempt was made to identify what portion of the literature about higher education used HEGIS data for what purposes and in what ways. These statistical analyses of the uses of HEGIS are reported in the second section of this chapter. The third section of the chapter summarizes the results of these two distinct methodologies.

FINDINGS FROM CONVENTIONAL REVIEW

HEGIS data tend to be used for two major purposes: 1) Describing the Condition of Higher Education; 2) Development of Policy Recommendations.

Reports on the Condition of Higher Education can serve many purposes:

They inform institutions and sectors of higher education on how they are doing in relationship to others in enrollments, financing, management of financial resources and/or acquisition of resources, faculty salaries, facilities, libraries, etc. They inform members of higher education and the management of higher education on faculty and staff salaries, thereby providing insight on the competitive status of their salaries. The reports, whether produced by the National Center for Education Statistics or a researcher or association, inform the public about relative tuition rates and highlight differences in prices among sectors of higher education.

These reports serve as a base for generating ideas concerning what is needed to improve the Condition of Higher Education in management, in marketing, and in planning. They are often the catalyst for initiating planning and policy analysis. Policy analysis, planning, and reports that show the relationship of higher education to other sectors of the economy and to national policy generally use data from most of the HEGIS surveys, but also draw heavily on such data bases as the Bureau of Labor Statistics' projections of manpower needs, demographic data from the Census Bureau, surveys of student characteristics including sources of financial aid, and specialized surveys of individuals needs, opinions, and behaviors. The more sophisticated the policy analysis, the more difficult it is to ascribe policy to any one source of data. It is probably a useless exercise. In manpower planning, for example, data from both the demand and supply side must be used. Equally important are assumptions about national goals and the condition of the world. These assumptions quite often are more critical than either the methodology used in projecting manpower needs or absolute accuracy in the data base.

All of the above have made the review of the literature and the reporting of findings from the literature challenging. The statistical study forced an analysis by type of data rather than by use or type of user. In the more conventional approach to the literature review--what was said by whom--it has been possible to discuss the uses of different types of data in relationship to use and type of users, but the overlap in uses has confounded neat categorization.

Uses for Developing Policy Recommendations

The thrust of much recent policy analysis in higher education has revolved around such subjects as equality of opportunity, equal access to higher education, affirmative action programs for both minorities and women, maintaining the diversity of higher education, and the amount of higher education needed given the apparent lack of appropriate employment for the highly educated.

These questions are addressed in many ways. In some cases statistics are used little or not at all as scholars and politicians attempt to define what is needed or desirable from philosophical or political viewpoints. In other cases (perhaps the most notable is the human capital argument), the desirability of higher education is argued with economic and demographic data, i.e., rates of growth in productivity, quality of life, or gross national income.

Cartter (1976) in the academic labor market developed a somewhat "dismal" picture of the market for Ph.D.s using NCES projections and HEGIS data on degrees awarded, enrollment, and faculty increments. While not developing any specific policy recommendations, he noted that "universities are delicate organizations of intellectual activity and scholarship, and blunt instruments are inappropriate for bringing about desired change. If public universities would ward off undifferentiated cutbacks, . . . they must take the initiative themselves. . . . The primary aim of responsible public policy and educational administration must be to retain the health and vigor of American scholarship" (p. 250).

Another book referring to manpower planning presents a similarly bleak picture of the professional job market related to academic degrees (Freeman, 1976). In The Over-Educated Americans, no solution is offered but a predictive forecasting model is presented. Much of the supporting data for the model has been taken from the U.S. Bureau of the Census, Bureau of Labor Statistics, Digest of Educational Statistics, National Science Foundation, and the Office of Education. Though HEGIS and NCES data are not specifically listed, much of the information concerning enrollment, degrees awarded, and institutional characteristics cited in the Digest of Educational Statistics and the Office of Education were gathered originally by HEGIS.

In More than Survival (1975), The Federal Role in Postsecondary Education: Unfinished Business--1975-1978 (1975), and Low or No Tuition (1975), the Carnegie Council used HEGIS data, projections from HEGIS by NCES, and other data to develop policy recommendations. Such data as the following were used: projections of enrollment and demand for faculty, historical data on enrollments, and comparison of various projected enrollments, distribution of enrollments by type of institutions, current fund expenditures, etc.

These data provided a base for moving from a set of philosophical, political, and economic concepts (explicit or implicit) to the following recommendations:

> (1) That institutional leaders prepare analyses of their institutions to determine, as accurately as possible, the present situation and the factors shaping the future course. These analyses should be used to inform their colleagues and constituents, and should be part of a larger effort designed to create attitudes receptive to and conditions conducive to change.
>
> (2) Each institution, if it has not already done so, should develop an overall strategy for flexibility in the use of funds, assignment of faculty, and utilization of space, and effective processes to make the necessary decisions.
>
> (3) Public policy should make possible universal access to higher education by the year 2000 for all those who wish to attend, beginning with full funding of existing student access programs by 1980.
>
> (4) Each state should develop an explicit overall policy toward its private sector under the new conditions of higher education.
>
> (5) The United States should develop a new, long-run policy toward research capacity in its universities.

Perhaps the single most important policy study in the seventies (if one ignores the cumulative effect of the many Carnegie supported studies) was the Congressionally mandated study by the National Commission on the Financing of Post-secondary Education. As a necessary framework for studying financial issues, the Commission set forth what it perceived as major objectives for post-secondary education: student access, choice, and opportunity; institutional diversity, excellence, and independence;

accountability; and financial support. Using HEGIS and other data to find that these objectives were not being met, policy recommendations were then developed for financing higher education so that the objectives could be met. As a result of the studies of the Commission, reports of the Carnegie Commission, and analyses of Educational Associations and Foundations (other than Carnegie), the means of funding higher education has progressively been shifted from the state and student to the federal government. An important by-product of the Commission's studies was increased sophistication in the programming and manipulation of HEGIS data and the identification and cataloging of important sources of data outside of HEGIS.

Reporting on the Condition of Higher Education

Quite often policy begins with the development or statement of a belief or philosophy about what should be occurring. Such philosophical arguments often lead to determining what conditions are. HEGIS has served this end and was initiated primarily for reporting on the condition of higher education. The review of the literature suggests that it has been successful in doing this. Tardy, certainly, but it has done well in the areas of enrollment, degrees awarded, and institutional characteristics.

Institutional Characteristics

The latter provides important information on the characteristics of institutions and is used extensively as a mailing list for scholars, publishers, salesmen and others studying or soliciting higher education institutions. It is the "Bible" for identifying accredited institutions. However, it provides a minimum of information on the relative quality of institutions or on price. A prospective consumer of education must go to other directories or the works of higher education scholars to get such information. Such directories as Lovejoy's College Guide (1974) and the directories of ACE and AACJC appear to be easier to use and are more current.

Financial Analysis of the Condition of Higher Education

What is true of the directory may be somewhat less true of the financial surveys and resulting reports of financial data by institutions. In the early seventies, HEGIS reports on the financing of higher education generally suffered three problems. First, some institutions did not know or were unwilling to report their financial status. Second, in the early years there was considerable variance among institutions in how they collected and classified financial data; and translation from one form of classification to another, including HEGIS, was difficult. This problem is being corrected as a result of studies, reports and handbooks by such organizations as The National Center for Higher Education Management

Systems (NCHEMS) and the National Association of College and University Business Officers (NACUBO). The efforts of these organizations have been bolstered by the impact of HEGIS requirements and the insistence of State Boards and legislative analysts for better management type information. The third problem is that NCES, in reporting survey results and/or discussing the condition of higher education, did little work in the early years in developing financial indicators or otherwise using the data to report meaningfully on the condition of higher education. This condition is now being corrected as NCES provides support and leadership in the development of such indicators, building on the early work of such scholars as Cheit (1971), Jenny (1972, 1974, 1975a and b), Jellema (1972), and others, and the later work of Andrew/Friedman (1976), Augenblick et al. (1978), Bowen (1974), Minter (1974), Hughes (1973), Frances (1979), Dickmeyer (1979), and many others.

The direction for such development was set by the Carnegie Commission in the early seventies, when it directed its attention to the changing role and prospects of higher education. Clark Kerr in a forward to Cheit's study (1971) of the New Depression in Higher Education observed that by the "end of the 1960's, signs of financial stress began to be apparent . . . by 1970 increasing numbers of institutions were facing financial difficulties as the flow of funds from various sources ceased to rise at the rapid rate" that had been experienced earlier" (p. vii). He observed that there was a "clear connection between the extraordinary growth of the first seven years of the decade and the financial stringency that began to emerge at the end of the decade" (p. vii). Enrollments had mushroomed; quality and variety of programs had increased. Cheit looked at 41 institutions, using a sample that included several types of public and private institutions as they were classified by Carnegie (1973, 1978) and in the Education Directory, Colleges and Universities. The selection and classification permitted the Carnegie Commission to weigh each group of institutions, by type and control, according to its representation among all institutions in the United States. Thus, it was able to estimate the total number of institutions (19 percent with 24 percent of the students) that were in financial difficulty. The structure of the Higher Education General Information Survey provided a base for generalizing to the higher education population from a limited study of a small sample of institutions. However, it is notable that the Commission, in drawing its inferences on the financial health of the population from Cheit's analysis of 41 institutions, had to be satisfied with 1967-68 data, approximately two years old at the time Cheit directed the study of 41 institutions.

Jellema (1973), approximately a year later, collected from colleges much of the data he could have obtained from HEGIS. However, the data would have been two or three years older than that obtained by his survey and he was probably concerned about its reliability, given the state of the art at institutions in completing surveys and interpreting HEGIS financial definitions.

From 1974 to the present time the use of HEGIS and HEGIS-like data appears to have proliferated in relationship to the increasing accessibility of HEGIS tapes in improved formats and to the growing concern about the financial health of higher education, particularly that of private higher education. A few titles and dates suggest the progressive growth in the sophisticated use of HEGIS-like data for analyzing the financial health of higher education:

1974--Carlson, Farmer, and Weathersby, "A Framework for Analyzing Postsecondary Education Financing Policies."

1975--Jenny, "Higher Education Finance: Health and Distress"; Berenyi, "Capital Financing by Colleges and Universities"; Bowen and Minter, Private Higher Education: First Annual Report on Financial and Educational Trends in the Private Sector of American Higher Education; Roberts, "Catalogue of Selected Machine-Readable Data Base for Postsecondary Education"; Truitt, "Classifying Measures of Institutional Financial Strength."

1976--Van Alstyne and Coldren, The Financial Measures Project: Development and Application of Measures of Financial Conditions of Colleges and Universities; Andrew and Friedman, A Study of the Causes for the Demise of Certain Small Private Liberal Arts Colleges in the United States; Lupton, Augenblick, and Heyison, "The Financial State of Higher Education"; National Center for Higher Education Management Systems, "Indicators of Institutional Financial Health" (Collier).

1977--Farmer, "Financial Health of Independent Colleges and Universities in New York"; St. John, Tingley, and Gallos, "Descriptive Analysis of Institutional Change Using HEGIS, CFAE, OCR, and Title III Data Bases"; Jackson, "Description of Merged Data Bases" (Harvard).

1978-79--Wing, "Monitoring the Financial Status of Independent Institutions in New York State"; Minter and Bowen, Independent Higher Education: Third Annual Report of Financial and Educational Trends; American Council on Education, "ACE/NCES Experimental Project on Financial Health Indicators"; Collier and Patrick, A Multivariate Approach to the Analysis of Institutional Financial Conditions; ACE, Financial Measures Project: New Developments in Measuring Financial Conditions of Colleges and Universities; McCoy and Halstead, Higher Education Financing in the Fifty States, Interstate Comparison, Fiscal Year 1976.

All of the above have not used HEGIS data for financial analysis. The most notable studies of the economic health of higher education that do not use HEGIS are probably the Minter and Bowen annual studies of private higher education that began in 1975 and the study of "Current Trends in American Higher Education" (Minter, Change, February 1979, p. 12-25). Bowen and Minter survey a national sample of financial officers of colleges and universities, asking for much of the same information that is reported in HEGIS. However, the data they receive from their surveys may be much more current than could be extracted from HEGIS. They may be more reliable, inasmuch as the final data are obtained by telephone interviews, which would permit the researcher to check on comparability of data resulting from differences among institutions in accounting practices and interpretations of HEGIS definitions.

The trend toward increased use of HEGIS data for analyzing the financial health of higher education by sector or as a whole should receive impetus from the current National Center for Education Statistics Experimental Project on Financial Health Indicators Using HEGIS Data (1979). The outputs of this study have been a set of merged data tapes of five HEGIS surveys for analysts, a process for allowing chief executives to compare their own institution's financial condition with other institutions, and the calculation of 61 ratios or indicators of financial health. (For a more detailed description of the development of financial health indicators and reports on the financial health of higher education, using both HEGIS and special survey data, see Brubaker, November 1979.) NCES has also supported a Joint Study Group on the Utility of HEGIS Finance Data in Conducting Institutional and Higher Education Sector Comparison. In a meeting of May 22-23, 1980, members of the group identified the following problems with the HEGIS finance file.

Varying Response Rates. Representatives from NCES indicated that the composition of the institutional group used in compiling the HEGIS finance data base varied from year to year.

Employee Benefits. State payments for employee benefits do not always flow through institutional accounts.

Tuition and Fees. In some states institutions follow the process of using tuition and fees as an offset to state appropriations and in some cases tuition and fees go directly into state general revenues.

Diversity of Appropriation Structures. An institution may receive state and federal funds through a variety of appropriation structures.

Diversity of Organization Structures. Differences in the way data are reported for medical schools, central administration, and the operation of extension and research institutes can often lead to data comparability problems.

Universe Encompassed by the HEGIS Finance Survey. Approximately 3,170 institutions are included in the HEGIS universe. The institutional composition of this universe can change from year to year.

Classification Structure Used by the HEGIS Finance Survey. There is concern that the classification structure used by HEGIS appropriately differentiates various types of institutions.

Student Aid Support. The amount of student aid support reported in HEGIS may be understated by the amount of support going directly to students.

Debt Arrangement and Service. Variance in the way debt service is included in institutional HEGIS reports can seriously hamper institutional comparisons.

Reporting Practices. Institutional reporting practices relative to HEGIS can vary from year to year and from institution to institution. Though there has been a concerted effort by NACUBO and other associations in the last few years to encourage institutions to report HEGIS data in a consistent manner, aberrations can occur in the data because of past reporting practices.

Chargebacks. In those instances in which a large university system provides services to other campuses, the finances for the campus providing the service will be overstated unless some form of chargeback system is used.

Imputation and Estimation of Institutional Data. Data are often imputed or estimated for institutions that fail to respond to the HEGIS finance survey.

This group recommended that NCES annotate financial reports with appropriate caveats concerning the above problems. (See the referenced report for a fuller discussion.) It also recommended or noted the following:

--That higher education associations, such as NACUBO, ACE, AIR, ECS, and AACRAO, should work with their memberships to improve the quality and timeliness of the data collected.

--That the services performed by NCES are valuable to higher education. Though the study group differed over the ways in which the data should be used, they were supportive of the agency's past efforts to facilitate the data collection process.

--[That] a technical advisory group should be formed to assist NCES in revising and updating, where appropriate, the definitions contained in HEGIS survey forms. Members of the advisory group should be drawn from institutions, state higher education boards, and representatives of higher education organizations.

--[That] the quality of HEGIS finance data collected could be improved significantly if adequate feedback in the form of institutional profiles were provided to participating institutions.

--[That] NCES needs to develop a procedure for correcting errors in data tapes from prior years.

--[That] State Higher Education Executive Officers (SHEEO) could do much to improve the quality of data by strengthening their editing activities and by working with institutions to encourage the timely submission of HEGIS data. The study group also suggested that the SHEEO members and institutions work together to provide feedback to NCES on the appropriateness of HEGIS survey instruments and on the procedure currently used to collect and disseminate HEGIS data.

--That data consistency would be improved by having NCES implement a standard format for all data tapes, across both surveys and years, and by monitoring more closely the production of these data tapes. The group also suggested that data tape consistency could be improved through use of crossfile editing.

--That a fixed and regular schedule for release of HEGIS finance data [be establisned], which would aid both researchers and other users of the data. Also suggested was a preliminary data tape that would be made available to researchers prior to the regular release of HEGIS data.

--That NCES should construct a users' manual.

--That the creation of a tape containing several years' data would enhance the use of the data for time-series analysis and would reduce the cost of providing multiple-year data to users. To ensure data consistency, this tape should be updated to incorporate any corrections in the data. The group noted that the American Institute for Research in the Behavioral Sciences, ACE, and NCHEMS are currently engaged in developing such a tape and encouraged NCES to work with these organizations in exploring ways of providing and regularly updating this information for data users. The group also emphasized the importance of integrating this data tape with other HEGIS data tapes, such as those on enrollment and faculty.

--That NCES improve its communications with providers and users of HEGIS data. It suggested, for example, that NCES representatives continue their participation at national and regional meetings of the Association of Institutional Research and increase their involvement at regional meetings of other institutional groups. The study group also recommended that NCES publicize current uses of HEGIS finance data.

--That NCES sponsor a users group to facilitate the exchange of information on uses of HEGIS finance data for research purposes.

Less Sophisticated Uses of HEGIS in Describing the Condition of Higher Education

While the use of HEGIS data (or HEGIS-like data) for financial analysis of the condition of higher education represents the most sophisticated use of enrollment, financial and faculty salary data, such uses did not show up in a research of articles and books to any great extent. The majority of reports on the financial health of education are found in governmental, foundational, and educational association reports or in memoranda to institutions. From time to time, and particularly in the last few years, the results and conclusions in these reports appear in journals such as Change and the Journal of Higher Education or as news stories in news magazines and papers. As noted, major uses of HEGIS for these purposes have been under serious development only in the last few years and generally have been conducted by a small coterie of scholars and educational researchers. The state of the art in financial analysis of the health of institutions, as well as major sectors of the industry, is useful and progressing, but embryonic.

The National Center for Education Statistics, now a major supporter of sophisticated financial analysis, reports the condition of postsecondary education in its 1980 statistical report in the more conventional forms of enrollment, student characteristics (age and sex), faculty characteristics and salary, student charges and current fund expenditures (total and by student) and ignores attempts at more sophisticated analyses of financial health. The example of NCES is generally followed by a majority of scholars. According to both the conventional review of major books and articles using HEGIS data and the more objective statistical analysis of journals and unpublished articles, the most general use of HEGIS data is to describe the size of higher education or sectors thereof. For example, Corson (1975), in The Governance of Colleges and Universities, underlines the importance of improving higher education management by giving such statistics as those in Figure 2.1. This type of use of HEGIS is common in most studies of higher education, including books, news letters, popular media, reports, and dissertations concerning finance, administration, or the goals of higher education. The most notable exception to this rule may be Mood's The Future of Higher Education (1973) and the Carnegie Commission of Higher Education report on Governance of Higher Education (1973), which did not use HEGIS data.

Another common use of HEGIS data is for describing a particular sector of higher education or its relationship to the total enterprise. For example, Pace in the Demise of Diversity (1974) looked at the decline of diversity and distinctiveness in higher education using a data base constructed from questionnaires that were completed by alumni and upper classmen drawn from 74 institutions. He did not use HEGIS data to define diversity or distinctiveness inasmuch as the measures he selected were not

FIGURE 2.1 Typical Use of HEGIS Data (From Corson, 1975)

	1951-52	1961-62	1971-72	1973-74
Degrees--credit enrollment	2,116	3,897	8,188	8,520
Graduate enrollment	234	398	971 est.	1,123
Public institutions of higher education	638	743	1,152	1,200
Enrollment	719,440	2,352,000	6,060,000	6,389,000
Private institutions of higher education	1,221	1,357	1,474	1,520
Enrollment	1,396,560	1,540,000	2,128,000	2,131,000

Data for 1951-52 and 1961-62 from the National Center for Educational Statistics, [sic] Digest of Educational Statistics, 1970, Washington: U.S. Office of Education, 1972, p. 27. Figures for 1973-74 from Projections of Education, Statistics to 1983-84, a manuscript to be published by the National Center for Educational Statistics in April 1975, Tables 3, 6, and 13.

obtained or reported by HEGIS. However, his design required a classification of institutions (general liberal arts and comprehensive), a description of the institutions in terms of enrollment, and such other characteristic data as type of control. The study also required the names, addresses, and officers of many institutions. This information could have been obtained from the Education Directory, Colleges and Universities or such directories as those noted earlier. These specialized directories generally contain directory data supplemented by data obtained through the publisher's own surveys.

In another look at a particular sector of higher education, Keeton in Models and Mavericks (1971) made extensive use of HEGIS data both as a prelude to the description of various types of institutions and as one part of the data base for distinguishing among types of institutions. For example, he used enrollment growth in private higher education as a percent of total enrollment for two different years (Digest of Educational Statistics); type of control (Carnegie Commission of Higher Education, 1970); levels of offerings by type of control (Education Directory); and level of degrees awarded (Earned Degrees Conferred) (NCES, 1965-78).

Perhaps one of the best examples of how HEGIS data are used as a prologue for an analysis of Higher Education condition or conditions, needs, or future predictions is the Benson and Hodgkinson essay in Implementing the Learning Society (1974). The preface notes that "The economic magnitude of higher education reveals its priority in our society. In 1970-71 total expenditures in higher education were $23.5 billion . . . equaling 2.4 percent of our national product and representing a per capita cost of $113." The problem concerning the tardiness of HEGIS data is evident.

In a 1970 study of The Open Door Colleges, the Carnegie Commission made extensive use of enrollment of students in two-year institutions, tabulating enrollments by type of control of institution and region. The source note suggests the state of the art in the collection and utilization of HEGIS data in the early part of the seventies.

> Since it is sometimes difficult to determine whether an institution is, in fact, a two-year institution or to identify it by type, the estimates are subject to a margin of error.

The number and reasons for such caveats appear to have declined over the years as the interpretation of HEGIS definitions has narrowed both in NCES and among institutions completing the HEGIS forms.

On the Condition of Women and Minorities in Higher Education

HEGIS has been used less in reporting on the condition of women and minorities than the reviewers anticipated when they began their review of material published between 1970 and early 1979. They expected a fairly heavy use of the data because of public policy to improve equity for these groups and the many groups promoting such equity. There are articles, reports, and books on the condition of women and minorities as members of higher educational community--as administrators, faculty and students. However, few use HEGIS data except in the most elementary form for examining the condition of these groups. For example, most of the data in Academic Women on the Move (Rossi, 1973) came from the author's own surveys, statistics from the National Academy of Sciences, and the American Council of Education. The latter may have obtained original data from HEGIS, but only a limited amount of HEGIS or possible HEGIS data were used: approximately five pages out of more than 500.

HEGIS was also not deemed useful by Van Alstyne et al. in looking at Affirmative Inaction (1977). She and her co-writers turned to a survey of administrative compensation conducted by the College and University Personnel Association (CUPA).

A more interesting look at affirmative action for women from the viewpoint of HEGIS data was Loeb's report when she used data from the American Association of University Professor's (AAUP) annual survey of faculty salaries as a prelude to examining whether the condition of women in higher education faculty was improving. Information was used from the Association's own 1974-75 and 1975-76 surveys. Today the AAUP is using HEGIS data to report on faculty salaries. The authors also drew on data used by Cartter and Ruhter who, in turn, may have drawn data from HEGIS.

There is evidence that the condition of women and minorities in higher education was beginning to receive more attention than in the early part of the decade, at least in terms of sophisticated analyses of statistical data on salaries, enrollment, and degrees and other awards conferred. For example, in 1980, NCES published the Condition of Education for Hispanic Americans.

Olivas (1979), author of The Dilemma of Access reported upon Hispanic Americans and drew heavily upon NCES and OCR data. Olivas describes major problem areas with HEGIS data. One,

> . . . NCES data from the same period are cited differently by NCES reports. The Condition of Education-1977 from NCES reports fall 1974 and fall 1975 total enrollments in two year institutions as 3,312,000 and 3,871,000, respectively. While The Condition of Education-1978 reports enrollment for the same two years as 3,404,000 and 3,970,000, respectively. (p. 8)

Two, data from agency to agency differs because of differences in the definition of the universe. For example, OCR, NCES and AACJC define a two-year college in one way while ACT and the Census Bureau use another definition. Thus the resulting data differ.

Black Higher Education

The use or non-use of HEGIS data concerning the condition of Blacks in Higher Education is represented by two extremes. In Access of Black Americans to Higher Education, How Open is the Door?, the National Advisory Committee on Black Higher Education and Black Colleges and Universities (1979) used HEGIS, Census Bureau Data, and a series of special surveys by scholars and associations to report on black student enrollment in higher education.

At the other extreme, the Bureau of Census in a study of the Social and Economic Status of the Black Population from 1970 to 1978 (U.S. Dept. of Commerce, 1979) reporting on schooling completed but ignored the disciplines in which blacks were enrolled, degrees awarded, and the role of blacks in higher education administration and faculty. These data can be obtained from HEGIS.

The Uses of HEGIS by the Popular Media

The most extensive regular user of HEGIS data is the Chronicle of Higher Education which reports weekly on important events in higher education to administrators and faculty of higher education. The Chronicle draws on a large range of sources for its Fact Sheets and special articles besides HEGIS concerning the condition or projected condition of higher education, including the following: 1) Bureau of the Census; 2) Department of Labor; 3) Association of Research Libraries; 4) Bureau of Indian Affairs; 5) National Association of Independent Colleges and Universities; 6) Council of Graduate Schools; 7) American Association of State Colleges and Universities; 8) National Association of State Universities and Land-Grant Colleges; 9) Center for the Study of Community Colleges; 10) National Research Council; 11) Office of Institutional Studies, University of Southern California; and 12) National Institute for Education.

Seldom are data attributed directly to HEGIS by the Chronicle or other media, but much of the information (particularly that coming from NCES or one of the educational associations) on enrollments, faculty salaries, and degrees awarded was probably derived from HEGIS. Stories on the financial condition of higher education and/or the difference in private and public sector tuition could have been and are likely to have been derived from HEGIS. A typical story using data that may have been derived from HEGIS is Middleton Lorenzo's article in the October 15, 1979 issue of the Chronicle reporting "Minority Students Found Lagging in Two-Year Degree." The author reports that minority students, despite relatively high enrollment in two year programs, have a disproportionately low share of the degrees, awarded by two-year colleges. On January 7, 1980, the Chronicle looked ahead to the eighties using NCES projections of enrollment and historical graphs that compared actual and projected enrollments and the National Institute of Education's Higher Education

Price Index for 1970 through 1987. An example of Chronicle use of data that could have been drawn from HEGIS reports on Libraries, if a recent survey had been completed, appeared in the February 11, 1980 issue. The data for this story came from the Association of Research Libraries, which obtained the information from its own surveys. A sampling of Chronicle articles indicates that the Chronicle uses Hegis or HEGIS-like data at least twice monthly in reporting to its clientele.

The New York Times in reporting on the condition of higher education appears to use Education Association reports, Bureau of Census studies, and its own surveys as much as it uses reports of the National Center of Education Statistics or HEGIS. For example, it attributed a November 19, 1978 story on enrollment in women's colleges to the Women's College Coalition. While the data might have been extracted from HEGIS, they probably came from a special survey, since such a survey would have provided timely data, requiring less manipulation than HEGIS.

On July 27, 1978, the Times reported on the condition of the private sector of higher education using information obtained by Bowen and Minter from a survey of 135 institutions for the National Association of Independent Colleges and Universities. The story reported that enrollment had increased for the years 1975-76 and 1976-77 and that faculty size had kept pace with the increase. HEGIS includes the key data elements that provided the basis for the article; however, the Association and authors of the report did their own survey, apparently because 1) HEGIS data would not have been as timely, and 2) HEGIS financial surveys might not have been as accurate and comparable.

However, use or attribution to HEGIS or NCES in the popular media would appear to be a function of how the data are prepared and released. On June 4, 1978, the Times printed a story based on a NCES press release, on the status of women in higher education. This story was followed on June 11, with a NCES news release on the enrollment rates of Blacks. Stories in the Times for all of the seventies included reports on the overall condition of higher education as reflected in enrollment figures; special reports comparing the private sector with the public sector in terms of enrollment, revenues and tuition; and reports on the progress of women and minorities in obtaining equitable treatment in higher education.

Other important media for informing the public on the condition of higher education are news magazines, such as Time, Newsweek, and U.S. News and World Report. All of these publications report annually on enrollment trends and degrees awarded. However, U.S. News and World Report, perhaps because of its format or its clientele, appears to give most attention to rising tuition and other costs of private higher education and to enrollment declines in the private sector of higher education. Most of the stories in these news magazines appear to be derived from 1) HEGIS data, after these data are converted into news stories by NCES or Educational Associations; 2) Bureau of Census news releases, based on their data; or 3) news stories prepared by quasi-governmental educational service organizations from data obtained from the organization's own surveys. Many of these surveys duplicate HEGIS to some degree. An example of a typical news story on higher education is the U.S. News and World Report of February 25, 1975, that students should find it "Easier to Get Into College." Tuition and room and board for private and public higher education institutions for 1964-65 were compared with that of 1974-75. Enrollment was projected to increase by less than 3 percent in the next year and to level off or decline by 1980. Admission officers were said to have predicted that there would be plenty of room for students except in the better known state universities and elite private colleges.

A more recent example of how the condition of education is reported in the popular media is the U.S. News and World Report story on "U.S. Colleges: Life and Death Struggle." The story reports on the number of private schools that closed between 1970 and 1976 as well as the increase in adults attending college. The National Association of Independent Colleges and Universities developed the story using a combination of data sources, including HEGIS.

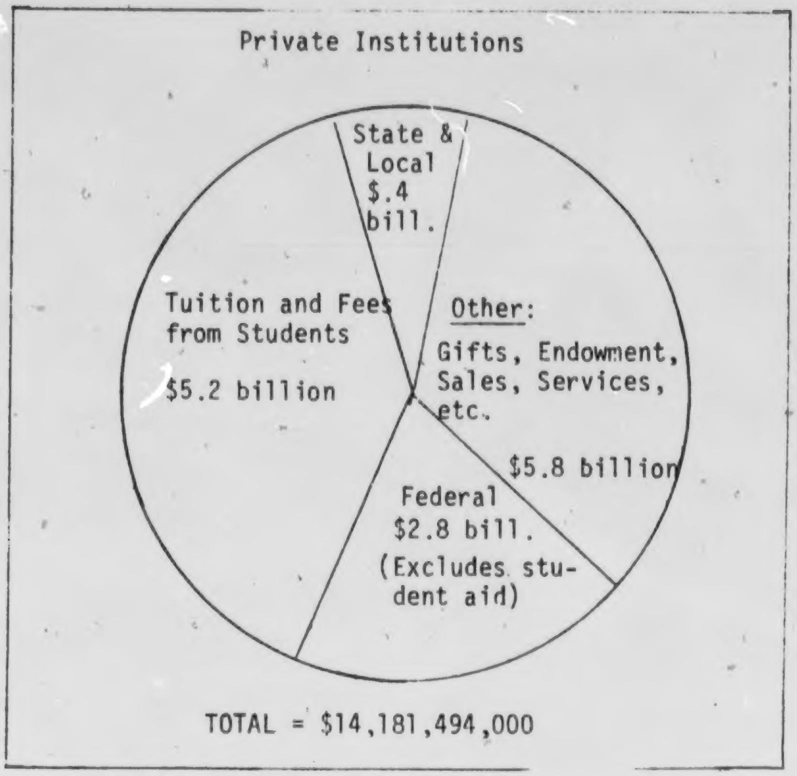
Uses of HEGIS by Government

HEGIS has been extensively used by Congressional committees. For example, data were used extensively in the 1975 House Hearings before the Subcommittee on Post-Secondary Education of the Committee on Education and Labor, and the 1975 Senate Hearing before the Subcommittee on Education of the Committee on Labor and Public Welfare. These hearings were concerned with: student financial aid viewed from all aspects, i.e., race, income, veterans' benefits, loans, and grants; financing institutions of higher education; student enrollment in higher education; and money sources for higher education. At least 15 to 20 percent of the testimony was based on HEGIS or HEGIS-like data. Examples of HEGIS data taken from committee testimony include that of Michael O'Keefe, Deputy Assistant Secretary for Planning and Evaluation, Education Department of HEW. Mr. O'Keefe used the following charts taken from NCES data: Figure 2.2 shows the sources of funding for post-secondary education: in further testimony, as Figure 2.3 shows, he discussed the increased revenues to post-secondary education.

On the other hand, Mr. English, in speaking on the representation of minorities in Ph.D. programs used data from the American Council of Education. These data appear to have been derived from HEGIS. (See Figure 2.4.)

FIGURE 2.2 Financial Postsecondary Education:

Where Does the Money Come From?



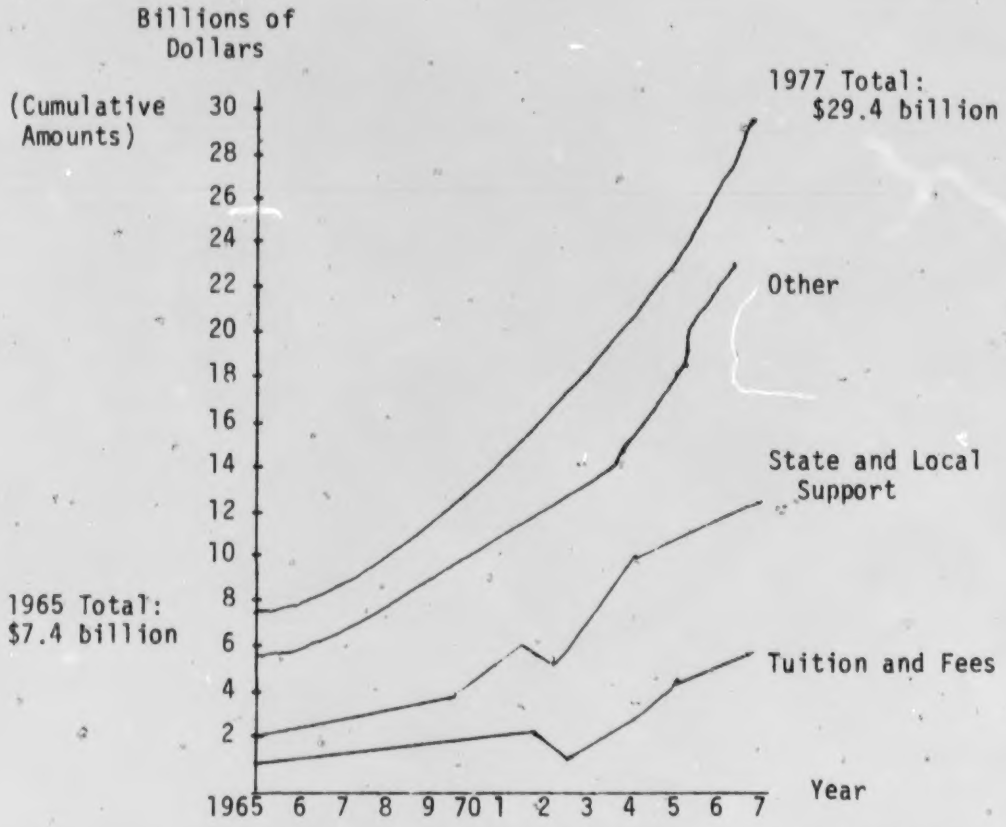
SOURCE: NCES, Financial Statistics of Institutions of Higher Education, 1976-77. Table 123.
From testimony by Michael O'Keefe, Deputy Assistant Secretary for Planning and Evaluation, Education Department of HEW.

FIGURE 2.3 Revenues to Postsecondary Education
1965-1977

Public Institutions

--Total revenues to public, institutions increased threefold between 1965 and 1977, an average annual increase of about 25 percent.

--On a per pupil basis, revenues increased by 101 percent in this period, an annual rate of about 8.4 percent.



SOURCE: NCES, Financial Statistics of Higher Education, FY 1976 State Data. Data after 1975 from NCES, University and College Surveys and Studies Branch. Chart 4.
From testimony by Michael O'Keefe, Deputy Assistant Secretary for Planning and Evaluation, Education Department of HEW.

FIGURE 2.4 Distribution of Racial and Ethnic Minorities Enrolled in Ph. D. Granting Institutions, Fall 1973

Field of Study	Total	Racial/Ethnic Group Minority Sub-Total	Black	Asian American	Spanish Surnamed	Native American
Arts and Humanities	53,920 100%	2,958 5.5%	1,516 2.8%	484 0.9%	794 1.5%	164 0.3%
Education	96,568 100%	9,074 9.4%	6,990 7.2%	587 0.6%	1,113 1.2%	384 0.4%
Engineering	31,273 100%	1,688 5.4%	368 1.2%	1,020 3.3%	263 0.8%	37 0.1%
Life Sciences	40,879 100%	2,474 6.1%	1,146 2.8%	779 1.9%	411 1.0%	138 0.3%
Physical Sciences and Mathematics	34,075 100%	1,721 5.1%	604 1.8%	827 2.4%	218 0.6%	72 0.2%
Social Sciences	35,583 100%	2,387 6.7%	1,471 4.1%	380 1.1%	426 1.2%	110 0.3%
Other Fields	80,666 100%	6,190 7.7%	16,241 4.4%	999 1.2%	769 1.0%	276 0.3%
TOTAL, All Fields	372,964 100%	26,492 7.1%	16,241 4.4%	5,076 1.4%	3,994 1.1%	1,180 0.3%

SOURCE: Elaine H. El-Khawas and Joan L. Kinzer, Enrollment of Minority Graduate Students at Ph.D.-Granting Institutions, Higher Education Panel Report, 19 Washington, D.C.: American Council on Education, 1974. (11)
From testimony by Richard A. English, Associate Vice President for Academic Affairs, The University of Michigan. He cited data from the American Council on Education which was probably obtained from HEGIS.

FINDINGS FROM THE STATISTICAL ANALYSIS OF THE LITERATURE

Sampling the Literature

An obvious source of information about the users of HEGIS data is the Educational Resources Information Center (ERIC). The ERIC system is not only an exhaustive system of compiling information from 700 journals, but also, in its present form, is amenable to computer based investigation. Therefore, a computer assisted search of the ERIC files was inaugurated to discover which articles had been produced over the past decade that might have contained HEGIS-type data. The "identifiers," or "key-words" used in this search process, were COLLEGES, UNIVERSITIES and HIGHER EDUCATION. This process identified all ERIC citations which dealt in any way with education beyond the high school level, without regard to whether or not HEGIS-like data were contained in the citation. All citations contained in the ERIC system dated from 1970 to 1979 were reviewed, and a total of 65,890 that might have proved pertinent to the present study were identified.

These citations were then divided into categories by using more specific ERIC "identifiers" as search labels. For example, when the citations were divided using the identifier "enrollment," some 2754 articles were found in the ERIC system that had reference to enrollment in educational institutions beyond the high school level. In like manner, ERIC citations that made reference to other areas (e.g., libraries, faculty, student mobility, degrees awarded, etc.) were identified for review. These categories will be discussed in detail later in this report.

Once the population of citations had been established, a sample of citations was selected for detailed review. Using standard sampling procedures, setting a ± 5 percent error tolerance and the 95 percent confidence level, a systematic sample of these citations was drawn. For certain categories, those in which HEGIS data would most likely be encountered, e.g., libraries, faculty salaries, enrollment; the size of the sample selected was increased in order to lessen the chance that HEGIS generated data would be overlooked through sampling error.

In addition to the ERIC search, several other strategies were employed to comb the literature for HEGIS type data. For example, a systematic search was made of the card catalog in the VPI & SU library, and any entries that might have contained HEGIS data were reviewed. At the same time, all textbooks in the EDUCATION section of the library were reviewed by a different team of reviewers. Selected conference abstracts and foundation reports, as well as popular media sources and scholarly papers, also underwent scrutiny.

Findings

An analysis of the uses made of HEGIS data, based on the literature sample conducted for this report, is summarized here in both tabular and graphic form. (See Figures 2.5 through 2.15.) In this analysis, percentages of references are reported by year of publication and then depicted graphically in order to simplify visual inspection for trend identification. The specific information contained in these graphs, e.g., the percentage of reference uncovered by the literature search using HEGIS data to report "degrees conferred" in 1977 (19.9 percent), will not be discussed in detail, since examination of the graphs provides this information at sight. However, some discussion of the trends that appear to be present in the data, as well as some probable reasons for them, is appropriate at this time.

Examination of the data presented in Figures 2.5 through 2.15, shows a pronounced trend in the uses of HEGIS data. In almost all "use categories," with the exception of "libraries" and "facilities," the percentages of references citing HEGIS data beginning in 1970 tends to climb until 1975, with a minor drop in 1972. Ending this upward trend is a pronounced drop in 1976, followed by a pronounced rise in the number of citations of HEGIS data in 1977. This is followed by a sharp decline in the number of citations in the years 1978 and 1979. The phenomenon of "peaks and valleys" in the yearly percentages of use of HEGIS data may be profitably addressed by consideration of several variables. These are presented in no particular order: a) the awareness of consumers of the existence of HEGIS data and their acceptance of it; b) the lag time between the collection of HEGIS data and its availability to possible consumers in either computerized or written form; c) major publications spawned by HEGIS data which subsequently become a source of citations for other writers; and d) the lag time between which a particular work citing HEGIS data is produced and the time it is captured by various reference sources. These phenomena and their impact on the number of references to HEGIS data reported in any particular year merit detailed consideration.

Consumer Awareness/Acceptance of HEGIS Data

When HEGIS was established in the late 60's, it faced the problems that all systems confront in their infancy: the system had to be efficiently organized, data collection forms had to be devised, and possible consumers had to be notified of the availability of its product. Early data collection forms were cumbersome and confusing to those who were asked to complete them, and possible consumers were apparently aware of or unconvinced about the usability of HEGIS data. Therefore, despite the fact that HEGIS information was collected on "Institutional Characteristics" as early as 1966-67, only 5.1 percent of the references identified in this study appearing in 1970 made use of HEGIS data to report on these concerns. However, during the next several years, HEGIS data became more visible in the references reviewed. Apparently, access to and acceptability of HEGIS information increased.

Time Lag Between HEGIS Data Collection/Availability

Since HEGIS involves surveys, checking at the source, edits and re-edits, there is considerable time lag between the time the data are collected and the time they become available to consumers. As a result, data collected during the 1967-68 year were not generally available to consumers until the 1970-71 year. When this time lag is considered, in conjunction with the problems associated with the beginnings of HEGIS, it may help to explain the relatively small percentage of HEGIS citations found in references appearing during the early years of the seventies decade. Buttressing this hypothesis is the increase in the number of references citing HEGIS data during the ensuing years. One might guess that as the information became more accessible and acceptable to consumers, more use was made of it.

Major Publications Using HEGIS Data

Many users of HEGIS data may not, for a variety of reasons, use primary source materials. In other words, a particular writer may find it more convenient to cite a secondary source of information rather than to acquire an original HEGIS tape or publication. For this reason, major publications which make use of original HEGIS data may have profound influence on the number of HEGIS citations that appear in succeeding years. An example of this "ripple effect" may be found in the relationship between the publications of the Carnegie Foundation in 1970-72, and the increase in the number of citations of HEGIS data in the literature in the following years. Similarly, the work of Andrew (1975) and Luptin, Augenblich, and Heyisons (1976) (who built on earlier works by Jenny and others) may have influenced the number of references to HEGIS data found in the years following their publications. Almost surely that led to more uses of HEGIS computer tapes in analyzing financial health of higher education and more reporting of findings from these studies, done by contract houses and scholars, both old and new (those preparing dissertations).

The bottom line on this discussion is that there may be what the economist would call a "multiplier effect" in the use of HEGIS data when a major publication using HEGIS appears. Several events occur: (1) the use and methodology of use is demonstrated to others, thereby encouraging further use; (2) new areas of research are often suggested; (3) the first and then subsequent works are cited; (4) the studies are published in popular media; and (5) others use the data, drawing from secondary, rather than original sources.

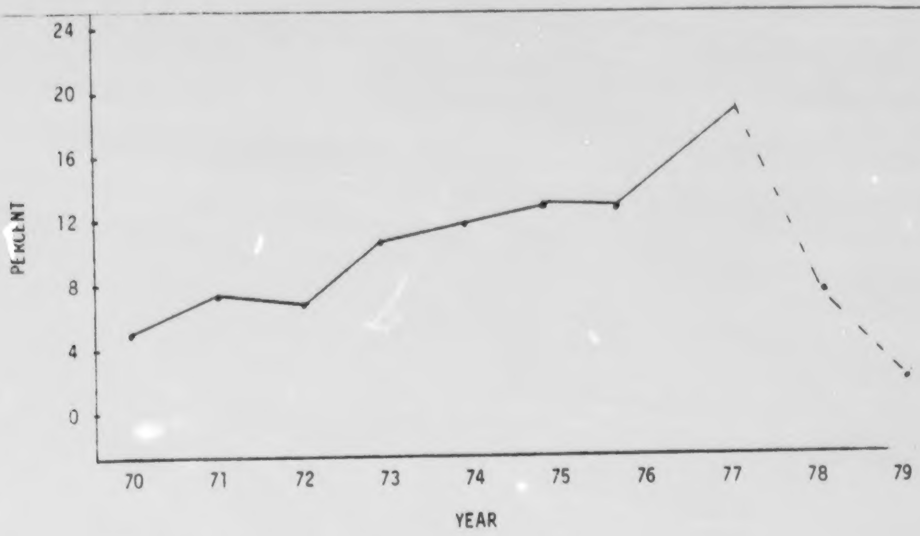
The Lag Between Production/Referencing of Sources

Just as there is a time lag between the time HEGIS data are collected and the time they are made available to consumers, there is a time lag between the time when a particular piece of work is produced and the time it is entered into a systematic reference system. For example, a paper delivered in June, 1977, was not available through ERIC until May, 1978. Again, this delay is the fault of no one, but rather a reflection of the complexity of data gathering and indexing. Materials of whatever kind cannot yet be referenced instantaneously.

This time lag probably explains much of the decline in the number of HEGIS citations discovered in the 1978 and 1979 years. It may be that much of the work done during this relatively recent time period has not yet been referenced in any of the systems that were investigated. However, some of the "tail-off" could be due to other factors. For example, NCES in 1977 reduced the number of HEGIS publications that were automatically distributed because of budget and policy. This limited the amount of information about the availability of new HEGIS data as well as containing easy access. There has also been a shift in focus in the analysis and reporting in higher education from simple descriptive statistics to more complex analysis of financial health. This type of analysis requires more "expertise and resources" in data processing than is generally available to the individual scholar. Also, in very recent months, there has been a shift from describing the health of higher education (now recognized as a matter for concern) to measuring outputs rather than inputs and developing (1) procedures for measuring outputs and (2) policy to improve the health of higher education. New policy proposals at this time tend to be in the area of management, marketing, or in the conceptual stage.

HEGIS, as presently organized, does not gather extensive amounts of output data that is appropriate to the evaluation of quality as measured by such factors as students' perceptions and achievements.

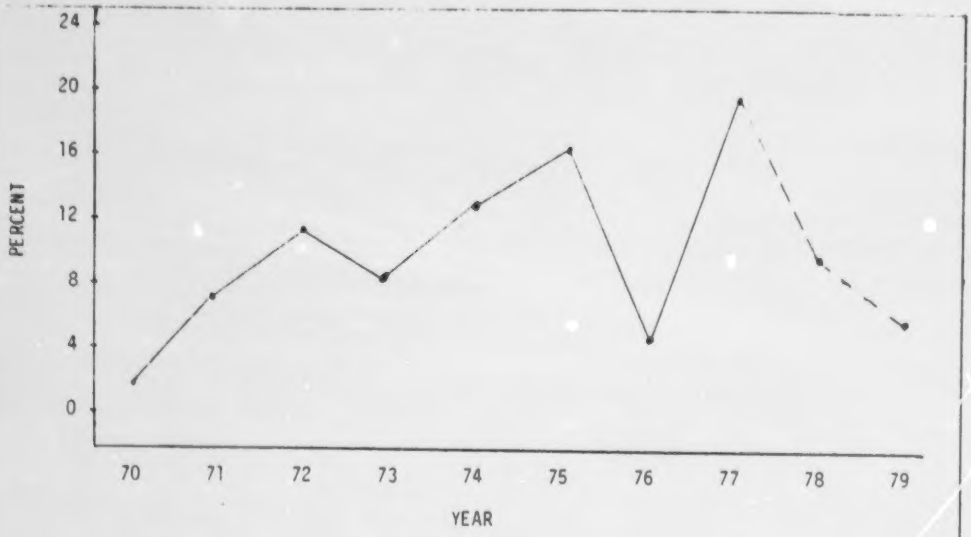
FIGURE 2.5 Percentage of Publications Using HEGIS Data to Report Institutional Characteristics



YEAR	PERCENTAGE
1970	5.1
1971	7.7
1972	6.9
1973	11.2
1974	11.7
1975	12.8
1976	12.8
1977	19.4
1978	7.2
1979	2.3

NOTE: The steep declines (indicated by a dash line) subsequent to approximately 1977 are probably due to the following factors: (1) Delays in indexing publications, (2) tardiness in publishing hard copies, thereby inhibiting general use, and (3) age of facilities and library surveys. The conventional review of the literature indicates growing use of such data as finance, enrollment, degrees awarded, and faculty salary since 1977 in terms of sophisticated analysis of conditions of health of various sectors and impact of affirmative action. The use of the data for the latter purpose is just beginning.

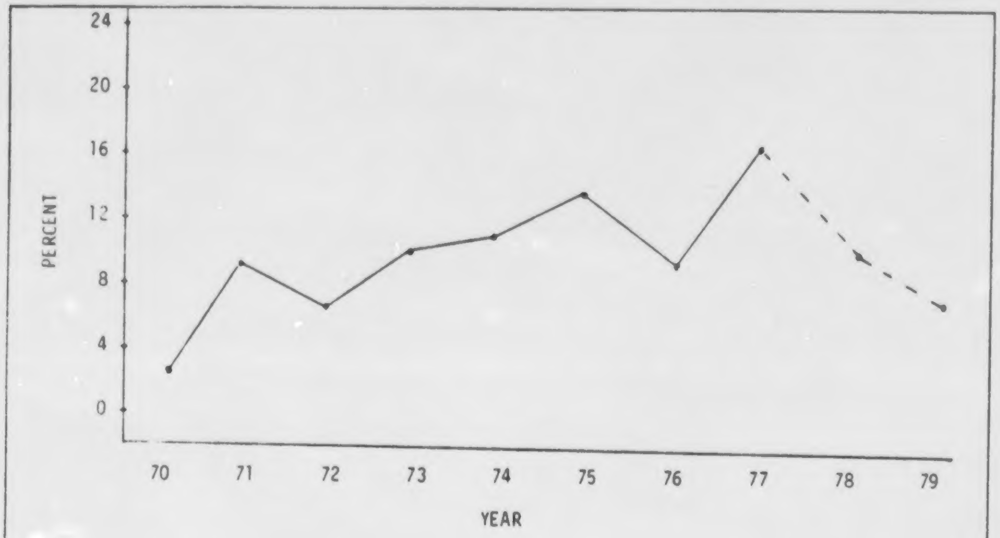
FIGURE 2.6 Percentage of Publications Using HEGIS Data to Report Degrees Conferred



YEAR	PERCENTAGE
1970	2.2
1971	7.4
1972	11.0
1973	8.1
1974	13.2
1975	16.2
1976	5.9
1977	19.9
1978	9.6
1979	6.6

NOTE: The steep declines (indicated by a dash line) subsequent to approximately 1977 are probably due to the following factors: (1) Delays in indexing publications, (2) tardiness in publishing hard copies, thereby inhibiting general use, and (3) age of facilities and library surveys. The conventional review of the literature indicates growing use of such data as finance, enrollment, degrees awarded, and faculty salary since 1977 in terms of sophisticated analysis of conditions of health of various sectors and impact of affirmative action. The use of the data for the latter purpose is just beginning.

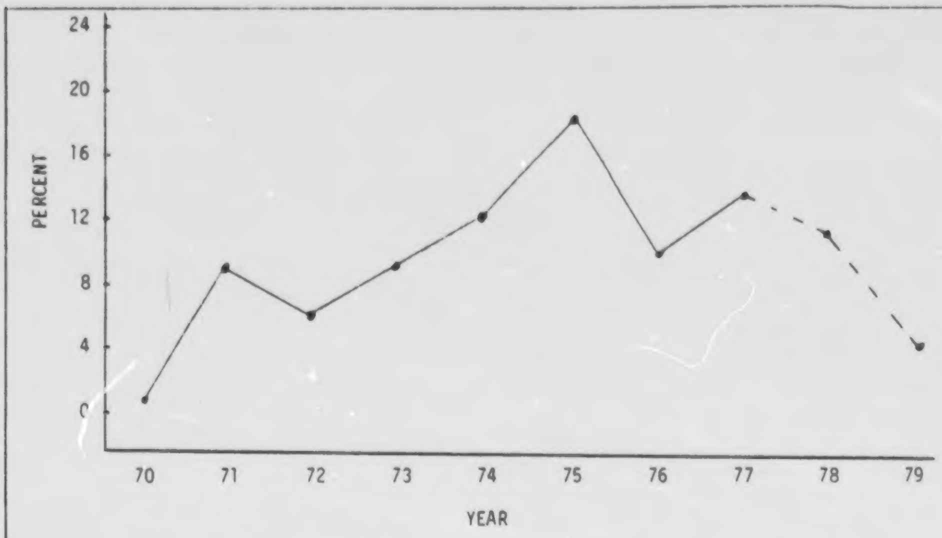
FIGURE 2.7 Percentage of Publications Using HEGIS Data to Report Fall Enrollment



YEAR	PERCENTAGE
1970	2.9
1971	9.1
1972	7.2
1973	10.1
1974	11.1
1975	14.9
1976	9.1
1977	17.8
1978	10.1
1979	7.7

NOTE: The steep declines (indicated by a dash line) subsequent to approximately 1977 are probably due to the following factors: (1) Delays in indexing publications, (2) tardiness in publishing hard copies, thereby inhibiting general use, and (3) age of facilities and library surveys. The conventional review of the literature indicates growing use of such data as finance, enrollment, degrees awarded, and faculty salary since 1977 in terms of sophisticated analysis of conditions of health of various sectors and impact of affirmative action. The use of the data for the latter purpose is just beginning.

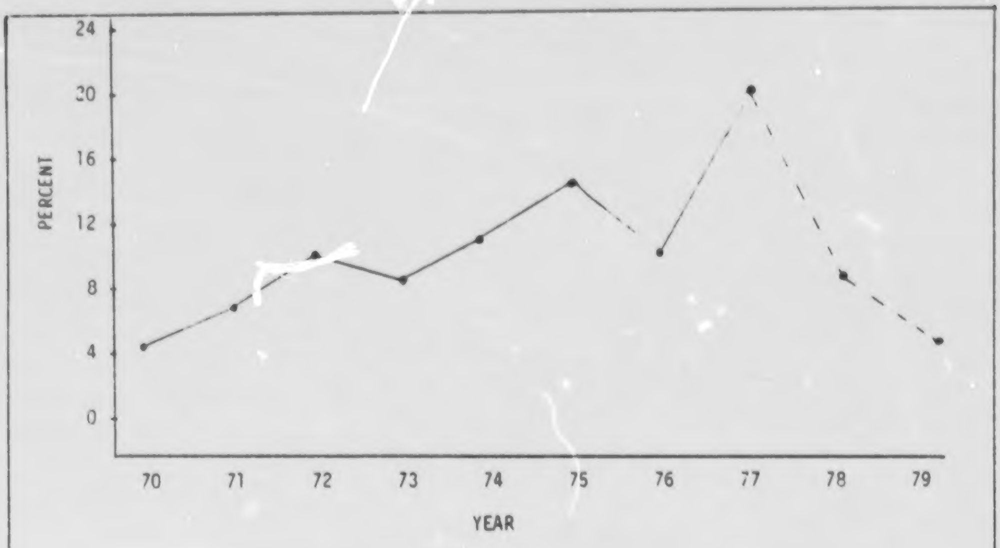
FIGURE 2.8 Percentage of Publications Using HEGIS Data to Report Residence and Migration



YEAR	PERCENTAGE
1970	1.8
1971	9.1
1972	7.3
1973	9.1
1974	12.7
1975	19.1
1976	10.0
1977	14.5
1978	11.8
1979	4.5

NOTE: The steep declines (indicated by a dash line) subsequent to approximately 1977 are probably due to the following factors: (1) Delays in indexing publications, (2) tardiness in publishing hard copies, thereby inhibiting general use, and (3) age of facilities and library surveys. The conventional review of the literature indicates growing use of such data as finance, enrollment, degrees awarded, and faculty salary since 1977 in terms of sophisticated analysis of conditions of health of various sectors and impact of affirmative action. The use of the data for the latter purpose is just beginning.

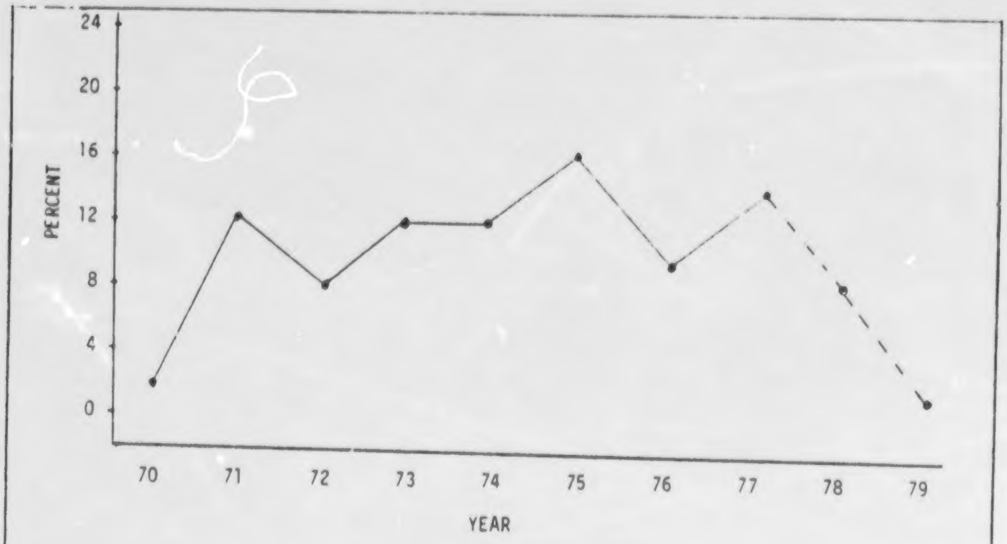
FIGURE 2.9 Percentage of Publications Using HEGIS Data to Report Faculty Employee Information



YEAR	PERCENTAGE
1970	4.1
1971	7.1
1972	10.2
1973	8.6
1974	11.2
1975	15.2
1976	10.2
1977	20.3
1978	8.6
1979	4.6

NOTE: The steep declines (indicated by a dash line) subsequent to approximately 1977 are probably due to the following factors: (1) Delays in indexing publications, (2) tardiness in publishing hard copies, thereby inhibiting general use, and (3) age of facilities and library surveys. The conventional review of the literature indicates growing use of such data as finance, enrollment, degrees awarded, and faculty salary since 1977 in terms of sophisticated analysis of conditions of health of various sectors and impact of affirmative action. The use of the data for the latter purpose is just beginning.

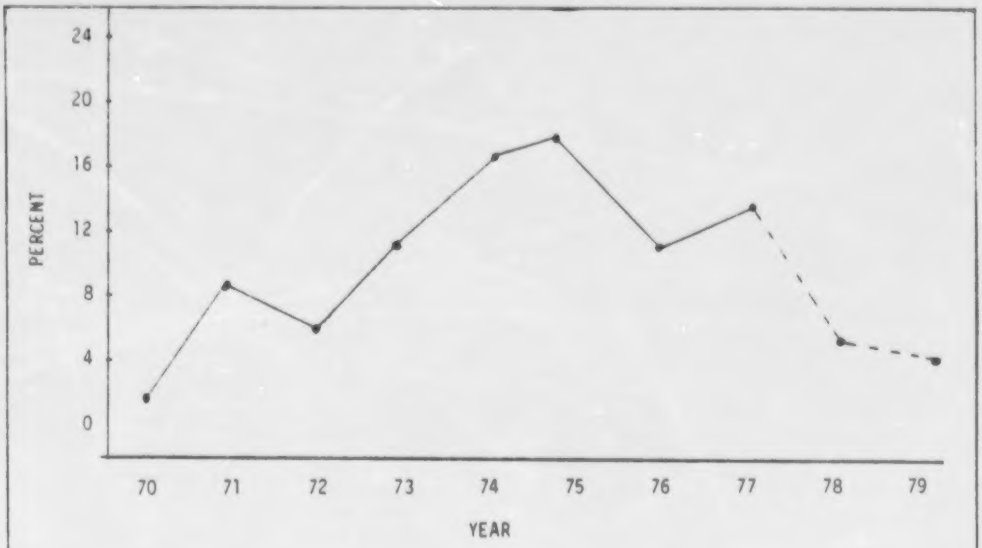
FIGURE 2.10 Percentage of Publications Using HEGIS Data to Report Staff Employee Information



YEAR	PERCENTAGE
1970	2.1
1971	12.5
1972	8.3
1973	12.5
1974	12.5
1975	16.7
1976	10.4
1977	14.6
1978	8.6
1979	2.1

NOTE: The steep declines (indicated by a dash line) subsequent to approximately 1977 are probably due to the following factors: (1) Delays in indexing publications, (2) tardiness in publishing hard copies, thereby inhibiting general use, and (3) age of facilities and library surveys. The conventional review of the literature indicates growing use of such data as finance, enrollment, degrees awarded, and faculty salary since 1977 in terms of sophisticated analysis of conditions of health of various sectors and impact of affirmative action. The use of the data for the latter purpose is just beginning.

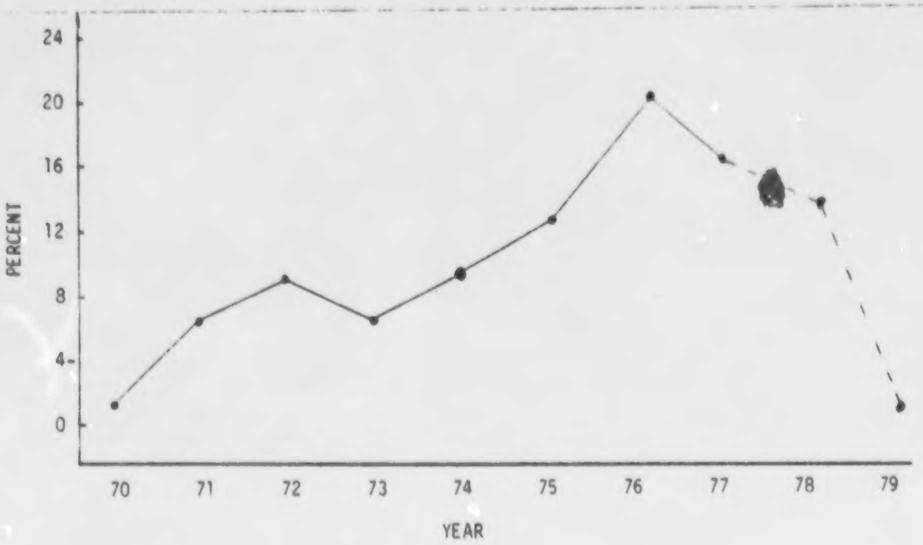
FIGURE 2.11 Percentage of Publications Using HEGIS Data to Report Finance Information



YEAR	PERCENTAGE
1970	2.8
1971	8.7
1972	6.9
1973	11.9
1974	16.5
1975	17.9
1976	11.9
1977	13.3
1978	5.5
1979	4.6

NOTE: The steep declines (indicated by a dash line) subsequent to approximately 1977 are probably due to the following factors: (1) Delays in indexing publications, (2) tardiness in publishing hard copies, thereby inhibiting general use, and (3) age of facilities and library surveys. The conventional review of the literature indicates growing use of such data as finance, enrollment, degrees awarded, and faculty salary since 1977 in terms of sophisticated analysis of conditions of health of various sectors and impact of affirmative action. The use of the data for the latter purpose is just beginning.

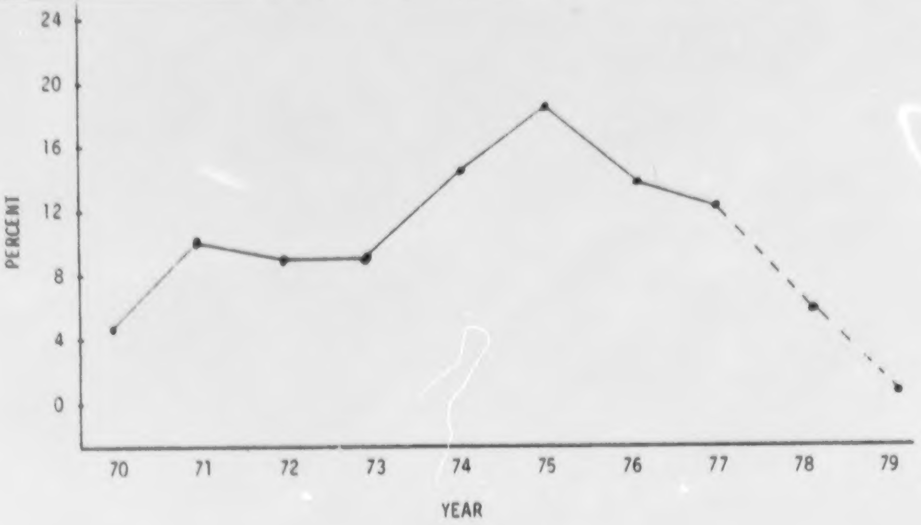
FIGURE 2.12 Percentage of Publications Using HEGIS Data to Report on Libraries



YEAR	PERCENTAGE
1970	1.8
1971	7.3
1972	9.1
1973	7.3
1974	9.1
1975	12.7
1976	20.0
1977	16.4
1978	14.5
1979	1.8

NOTE: The steep declines (indicated by a dash line) subsequent to approximately 1977 are probably due to the following factors: (1) Delays in indexing publications, (2) tardiness in publishing hard copies, thereby inhibiting general use, and (3) age of facilities and library surveys. The conventional review of the literature indicates growing use of such data as finance, enrollment, degrees awarded, and faculty salary since 1977 in terms of sophisticated analysis of conditions of health of various sectors and impact of affirmative action. The use of the data for the latter purpose is just beginning.

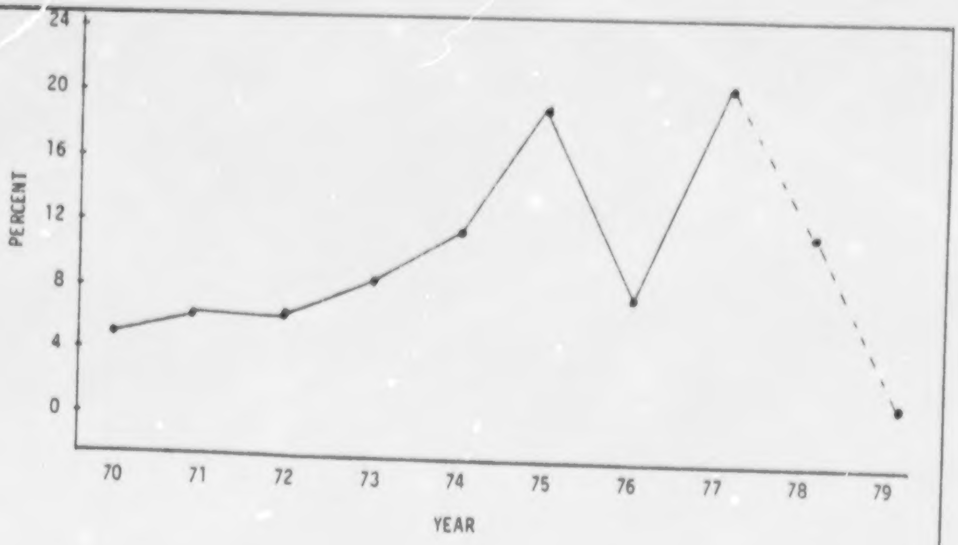
FIGURE 2.13 Percentage of Publications Using HEGIS Data to Report on Facilities



YEAR	PERCENTAGE
1970	4.5
1971	10.2
1972	9.1
1973	9.1
1974	14.8
1975	18.2
1976	13.6
1977	12.5
1978	6.8
1979	1.1

NOTE: The steep declines (indicated by a dash line) subsequent to approximately 1977 are probably due to the following factors: (1) Delays in indexing publications, (2) tardiness in publishing hard copies, thereby inhibiting general use, and (3) age of facilities and library surveys. The conventional review of the literature indicates growing use of such data as finance, enrollment, degrees awarded, and faculty salary since 1977 in terms of sophisticated analysis of conditions of health of various sectors and impact of affirmative action. The use of the data for the latter purpose is just beginning.

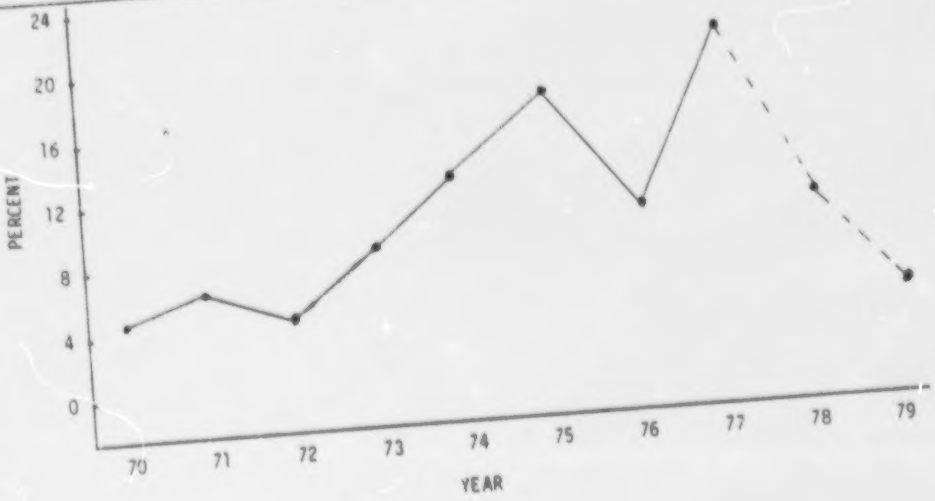
FIGURE 2.14 Percentage of Publications Using HEGIS Data to Report on Adult/Continuing Education



YEAR	PERCENTAGE
1970	5.0
1971	6.7
1972	6.7
1973	8.4
1974	11.8
1975	19.3
1976	7.6
1977	20.2
1978	11.8
1979	2.5

NOTE: The steep declines (indicated by a dash line) subsequent to approximately 1977 are probably due to the following factors: (1) Delays in indexing publications, (2) tardiness in publishing hard copies, thereby inhibiting general use, and (3) age of facilities and library surveys. The conventional review of the literature indicates growing use of such data as finance, enrollment, degrees awarded, and faculty salary since 1977 in terms of sophisticated analysis of conditions of health of various sectors and impact of affirmative action. The use of the data for the latter purpose is just beginning.

FIGURE 2.15 Percentage of Publications Using HEGIS Data to Report on Vocational/Technical Education



YEAR	PERCENTAGE
1970	4.8
1971	6.7
1972	4.8
1973	8.6
1974	12.4
1975	17.1
1976	9.5
1977	21.6
1978	9.5
1979	4.8

NOTE: The steep declines (indicated by a dash line) subsequent to approximately 1977 are probably due to the following factors: (1) Delays in indexing publications, (2) tardiness in publishing hard copies, thereby inhibiting general use, and (3) age of facilities and library surveys. The conventional review of the literature indicates growing use of such data as finance, enrollment, degrees awarded, and faculty salary since 1977 in terms of sophisticated analysis of conditions of health of various sectors and impact of affirmative action. The use of the data for the latter purpose is just beginning.

SUMMARY OF USE AND USERS OF HEGIS DATA

During the course of this study, several types of consumers of HEGIS data were identified. These "USERS" of the data were grouped into six categories for purposes of analysis: Quasi-government Agencies, Federal Agencies, State Agencies, Institutions, Scholars and the General Public. This section summarizes the extent of use of HEGIS data by each of these consumer groups. Each type of HEGIS survey is discussed separately.

WHY HEGIS DATA ARE USED

Obviously, people and groups make use of HEGIS data for a variety of reasons. According to this review, the principal use of HEGIS data is for use in describing higher education. More than half of the consumer groups used the data for description.

However, another large percentage of the consumer groups (22 percent) were found to be using HEGIS data for policy/planning activities. (See Table 2.1.)

Table 2.1. Purposes for Which HEGIS Data are Used by Groups Utilizing HEGIS Data*

(Numbers in parentheses are percentages of total.)

User \ Purpose of Use	Policy/ Planning	Description	Projections	Other/ None	Row Total
Quasi-Governmental Agencies	11 (1.3)	44 (5.0)	2 (0.2)	3 (0.3)	60 (6.9)
Federal Government Agency	7 (0.8)	16 (1.8)	2 (0.2)	7 (0.8)	32 (3.7)
State Government Agency	14 (1.6)	22 (2.5)	0 (0)	1 (0.1)	37 (4.2)
Institutions	108 (12.4)	205 (23.4)	26 (3.0)	98 (11.2)	437 (22.1)
General Public/ Other	38 (4.4)	106 (12.1)	11 (1.3)	38 (4.4)	193 (22.1)
Scholars	14 (1.6)	36 (6.4)	5 (0.6)	39 (4.5)	114 (13.1)
Column Totals	192 (22.0)	449 (51.4)	46 (5.3)	186 (21.2)	
					Total = 873

*Most common purpose for using HEGIS data is for description; 22% of citations involve using HEGIS data for policy/planning.

INSTITUTIONAL CHARACTERISTICS SURVEY

Apparently, this is the most widely used of all HEGIS surveys. When the literature was reviewed for frequency of citations, 43.2 percent of the material reviewed indicated some use of data contained in the Institutional Characteristics Survey. Substantial percentages of citations from all sources made use of these data. (See Table 2.2.)

Table 2.2. Summary of Reported Use of HEGIS Data by Various Users to Report/Analyze Institutional Characteristics

(Numbers in parentheses cell entries as a percentage of total.)

User	No	Yes
Quasi-government Agencies	28 (3.2)	32 (3.7)
Federal Agencies	25 (2.9)	7 (0.8)
State Agencies	13 (1.5)	24 (2.7)
Institutions	262 (30.0)	175 (20.0)
General Public	87 (10.0)	106 (12.2)
Scholars	82 (9.4)	32 (3.7)
Total	497 (56.8)	376 (43.2)
		N = 873

DEGREES CONFERRED

Over fifteen percent (15.6%) of the citations sampled made reference to data contained in the Degrees Conferred HEGIS survey. All consumer sources appeared to have made use of the data. (See Table 2.3.)

Table 2.3. Summary of Use of HEGIS Data by Various Users to Report/Analyze Degrees Conferred

(Numbers in parentheses cell entries as a percentage of total.)

User	No	Yes
Quasi-government Agencies	47 (5.4)	13 (1.5)
Federal Agencies	26 (3.0)	6 (0.7)
State Agencies	24 (2.7)	13 (1.5)
Institutions	385 (44.1)	52 (6.0)
General Public	153 (17.5)	40 (4.6)
Scholars	102 (11.7)	12 (1.4)
Total	737 (84.4)	136 (15.6)
		N = 873

OPENING FALL ENROLLMENT

About one-quarter of the citations identified in the literature sample involved Opening Fall Enrollment HEGIS survey data. Use of the data by institutions accounts for almost half (96 out of 208) of the citations involving these data. (See Table 2.4.)

Table 2.4. Summary of Use of HEGIS Data by Various Users to Report/Analyze Opening Fall Enrollment

(Numbers in parentheses cell entries as a percentage of total.)

User	No	Yes
Quasi-government Agencies	45 (5.2)	15 (1.7)
Federal Agencies	24 (2.7)	8 (0.9)
State Agencies	20 (2.3)	17 (1.9)
Institutions	341 (39.1)	96 (11.0)
General Public	140 (16.3)	53 (6.1)
Scholars	95 (10.9)	19 (2.2)
Total	665 (76.2)	208 (23.8)
		N = 873

RESIDENCE AND MIGRATION

About one-eighth of the citations encountered in the sample of the literature review make reference to HEGIS data dealing with Residence and Migration. Half of these citations (50 out of 110) come from sources attributed to institutions. (These data are summarized in Table 2.5.)

Table 2.5. Summary of Use of HEGIS Data by Various Users to Report/ Analyze Residence and Migration

(Numbers in parentheses cell entries as a percentage of total.)

User	No	Yes
Quasi-government Agencies	46 (5.3)	14 (1.6)
Federal Agencies	27 (3.1)	5 (0.6)
State Agencies	26 (3.0)	11 (1.3)
Institutions	387 (44.3)	50 (5.7)
General Public	173 (19.8)	20 (2.3)
Scholars	104 (11.9)	10 (1.1)
Total	763 (87.4)	110 (12.6)
		N = 873

FACULTY EMPLOYEE DATA

Almost a quarter of all citations (22.6 percent) using HEGIS data involves Faculty Employee data. Note that institutional use of these data accounts for more than half (104 out of 197) of all of the citations discovered. (See Table 2.6.)

Table 2.6. Summary of Use of HEGIS Data by Various Users to Report/Analyze Faculty Employee Data

(Numbers in parentheses cell entries as a percentage of total.)

User	No	Yes
Quasi-government Agencies	40 (4.6)	20 (2.3)
Federal Agencies	30 (3.4)	2 (0.2)
State Agencies	28 (3.2)	9 (1.0)
Institutions	333 (38.1)	104 (11.9)
General Public	147 (16.8)	46 (5.3)
Scholars	98 (11.2)	16 (1.8)
Total	676 (77.4)	197 (22.6)
		N = 873

NON-FACULTY EMPLOYEE DATA

This is the least used of all HEGIS surveys, according to the sample of citations used in this study. In fact, it seems that its use is restricted to quasi-governmental agencies and institutions. These two consumer groups account for 30 of the 48 citations identified during the literature search. (See Table 2.7.)

Table 2.7. Summary of Use of HEGIS Data by Various Users to Report/Analyze Non-Faculty Employee Data

(Numbers in parentheses cell entries as a percentage of total.)

User	No	Yes
Quasi-government Agencies	46 (5.3)	14 (1.6)
Federal Agencies	31 (3.6)	1 (0.1)
State Agencies	30 (3.4)	7 (0.8)
Institutions	421 (48.2)	16 (1.8)
General Public	187 (21.4)	6 (0.7)
Scholars	110 (12.6)	4 (0.5)
Total	825 (94.5)	48 (5.5)
		N = 873

FINANCE

Exactly one-quarter of the citation referred to data in the HEGIS Finance survey. The financial condition of higher education is a matter of concern to a great many constituencies. There are a substantial number of citations from all groups of consumers. (See Table 2.8.)

Table 2.8. Summary of Use of HEGIS Data by Various Users to Report/Analyze Finance

(Numbers in parentheses cell entries as a percentage of total.)

User	No	Yes
Quasi-government Agencies	31 (3.6)	29 (3.3)
Federal Agencies	21 (2.4)	11 (1.3)
State Agencies	19 (2.2)	18 (2.1)
Institutions	332 (38.0)	105 (12.0)
General Public	154 (17.6)	39 (4.5)
Scholars	98 (11.2)	16 (1.8)
Total	655 (75.0)	218 (25.0)
		N = 873

LIBRARIES

The HEGIS Library survey is apparently infrequently used by potential customers. Only 6.3 percent of all HEGIS citations examined were concerned with libraries. Institutions themselves were the chief users of data about libraries, and no report by a federal agency referred to this HEGIS survey data. (See Table 2.9.)

Table 2.9. Summary of Use of HEGIS Data by Various Users to Report/ Analyze Libraries

(Numbers in parentheses cell entries as a percentage of total.)

User	No	Yes
Quasi-government Agencies	49 (5.6)	11 (1.3)
Federal Agencies	32 (3.7)	0 (0)
State Agencies	30 (3.4)	7 (0.8)
Institutions	412 (47.2)	25 (2.9)
General Public	185 (21.2)	8 (0.9)
Scholars	110 (12.6)	4 (0.5)
Total	818 (93.7)	55 (6.3)
		N = 873

FACILITIES

The most common users of this data are institutions, followed by the general public. (See Table 2.10.)

Table 2.10. Summary of Use of HEGIS Data by Various Users to Report/ Analyze Facilities

(Numbers in parentheses cell entries as a percentage of total.)

User	No	Yes
Quasi-government Agencies	47 (5.4)	13 (1.5)
Federal Agencies	30 (3.4)	2 (0.2)
State Agencies	27 (3.1)	10 (1.1)
Institutions	404 (46.3)	33 (3.8)
General Public	174 (20.0)	19 (2.2)
Scholars	103 (11.8)	11 (1.3)
Total	785 (89.9)	88 (10.1)
		N = 873

ADULT & CONTINUING EDUCATION

According to the review of the literature about 50 percent adult and continuing education data users are related to institutional analyses. (See Table 2.11.)

Table 2.11. Summary of Use of HEGIS Data by Various Users to Report/Analyze Adult & Continuing Education

(Numbers in parentheses cell entries as a percentage of total.)

User	No	Yes
Quasi-government Agencies	48 (5.5)	12 (1.4)
Federal Agencies	27 (3.1)	5 (0.6)
State Agencies	29 (3.3)	8 (0.9)
Institutions	387 (44.3)	50 (5.7)
General Public	162 (18.5)	31 (3.5)
Scholars	101 (11.6)	13 (1.5)
Total	754 (86.4)	119 (13.6)
		N = 873

SUMMARIES OF FINDINGS

The material in this section was gathered by different processes and by different investigators. One investigator reviewed the literature in a conventional fashion. He drew on his experience to look at major areas of the literature that would use HEGIS and then made blind searches for additional literature. The review was purposely subjective, attempting to get at how HEGIS was used, by whom, and for what purposes. No effort was made in this review to precisely count how much HEGIS was used for what purposes in what years. The reviewer attempted to get an impression of how the data were used and to discern patterns and movements in its use and for what specific purposes.

The investigator attempted to describe the uses of HEGIS statistically defined users, sources and uses with some precision. This permitted him to count the sources and types of usage rather precisely. The technique ensured comprehensive coverage and accuracy. It provided data and analyses that can be easily replicated. The weakness in this approach is that the shape of the forest may have been lost in the counting of the trees. The statistical analyses, while much more thorough than the conventional approach in describing the extent of the uses and trends in the use of various types of data, is weak in indicating the importance or value of HEGIS use. While it is potentially possible to count data in such a way as to measure the value of the use, it is difficult. As one moves into the area of value judgments and classification of use by purpose, there is increasing opportunity for misinterpretation during coding and for ignoring the overall context of material in which the data is used.

However, an attempt was made in the statistical analysis to count the purposes for which HEGIS was used. As might have been expected, coders had as much trouble in precisely classifying HEGIS by use as the subjective reviewer encountered. As a result, there was not significant statistical discrimination among purposes. Almost all publications were classified as using HEGIS data in descriptive ways concerning the conditions of higher education. As demonstrated in this chapter, the reviewer, using conventional methodology, discovered considerable overlaps in the use of HEGIS for policy development, describing the condition of higher education, and evaluation.

The two very different processes, conducted independently, generally supported each other. The reviewers who used conventional methodology sensed an upward trend in the use of HEGIS data and a shift from one set of HEGIS to another set over the years. The same trend was discovered through statistical analysis. Both processes discovered a heavier use of HEGIS than the investigators had hypothesized.

The investigators agreed that HEGIS or HEGIS-like data is used extensively in the literature that reports on the condition of higher education purposes and policy. Such use, according to the review, has progressively increased. There are cycles in the uses of HEGIS that appear to correspond roughly with intensity of concern about various problems in higher education and/or the focus of intense studies on higher education. There also appears to be some correspondence between these cycles and the acquisition and/or dissemination of HEGIS data.

The conventional review of HEGIS data supports critics' views that HEGIS is published (in hard copy and on computer tapes) much too slowly, and that there is concern about its accuracy or reliability. Many scholars still use their own surveys to acquire what could be obtained from HEGIS; presumably because they can get more recent and more reliable data at a small cost in sampling error. Some of this bias may be the result of experiences with HEGIS in the late sixties and early seventies when institutions did not have the systems now in use for gathering and compiling HEGIS data according to HEGIS definitions. Systems in the early days allowed for considerable variability in the interpretation of HEGIS definitions since much of the coding and classification was "crosswalked" manually by staff that turned over frequently.

Much of these early conditions have been alleviated with 1) the popularizing and implementation of better accounting systems, which approximate in classification schema HEGIS definitions, 2) the increasing use of HEGIS, and 3) the increasing control or audit of HEGIS by state agencies. All of these should improve the reliability and consistency of HEGIS reporting.

The review indicates that HEGIS has provided a necessary data-base for the development of policy for higher education and for reporting its condition. It is a system that, if it did not exist, would have to be invented. It appears that such systems are now being invented by educational associations and scholars for acquiring more information on the quality and outputs of higher education. At most symposia for the evaluation of HEGIS, increasingly urgent recommendations have been made to extend the surveys to collect more data on quality and output. The increasing growth in the use of such data in the literature indicates that NCES might well outweigh the benefits and costs of broadening HEGIS to acquire more quality and output data.

The review also discovered progressive sophistication in the uses of HEGIS for analyzing the financial condition of higher education. Much of this progress has been supported in recent years by NCES. There has not been parallel development in the use of HEGIS data for analyzing the results of affirmative action programs. The state of the art in this area generally approximates what was true for financial analysis in the late sixties and early seventies. It is, therefore, recommended that NCES consider the trade-offs involved in supporting better use of HEGIS in evaluating the effects of affirmative action policies on enrollments and achievement of women and minorities in higher education.

CHAPTER III

FINDINGS FROM PERSONAL INTERVIEWS

Overview

Over 75 people were interviewed concerning the uses of HEGIS data. Some of the interviewees were selected from the authors of publications that reported on the condition of higher education or that appeared to have affected the development of policy and law concerning higher education. Other interviewees included financial officers, institutional researchers, and academic planners at both the state and institutional level. These interviewees represented libraries, educational associations, institutions of higher education, state agencies or state departments of higher education, and a state legislature. (See Appendix E for a list of interviewees and Appendix D for the Interview Guide.)

The interviews were scheduled ahead of time and lasted from one to two hours. In many cases, the interviewee provided reports and references that had used HEGIS data. No attempt was made to structure the interviews in a formal way, and accordingly the questions that were asked differed from one interview to the next. A tape recorder was not used because the interviewer felt that it might inhibit the flow of information; however, extensive notes were made. Since the interviewees were extremely frank and were ensured of confidentiality, no attempt is made in this report (with one exception) to attribute findings and/or examples to any interviewee.

The review of literature, as well as the interviewer's experience with HEGIS, had provided the interviewer with a set of hypotheses in respect to how interviewees might answer questions concerning the accuracy and timeliness of data, its adequacy and use in relationship to policy analysis and reporting on the condition of higher education, the relative value of universe and sample data, and the extent to which data from various surveys were used. The findings from the literature are reported in detail elsewhere in this report. However, the major hypotheses that were tested in the initial interviews were the following:

1. That the uses of HEGIS data have increased significantly in recent years, particularly in the sophistication with which they are used.

2. That accuracy had improved.

3. That enrollment and financial data were used much more extensively than other survey data though faculty salary data are reported regularly and has considerable interest to faculty and decision makers at the institutional level.

4. That HEGIS data have provided a foundation or base for the majority of the reports and books that have affected public policy on higher education.

5. That HEGIS data have not been used as extensively as they might be in reporting on the condition of women and minorities in higher education and in evaluating the impact of affirmative action policies, because overhead or start-up costs in using HEGIS data for analysis is relatively high.

6. That HEGIS is a system that would have to be invented if it were not already in place because of the increasing need for data for policy making and planning.

7. That more data on student characteristics and financial aid are wanted.

8. That the collection of HEGIS data has had an impact on the discipline and sophistication of data collection systems at the institution and state levels.

9. That the collection of HEGIS data does not impose a high burden on institutions since most of the data would be collected by institutions and/or states for management purposes anyway.

10. That institutions are concerned about the uses of HEGIS for comparison purposes.

During the interviews, which occurred over a period of three months, additional hypotheses were developed and tested. In addition to testing the above hypotheses, answers to most of the questions set forth in the Interview Guide were obtained. In reporting on these interviews the following organization has been followed. First, comments on the uses and problems of specific HEGIS Surveys are summarized under the titles of the surveys with one exception. Since the comments on the Facility and Library Surveys were similar, they have been summarized together. Following the discussion of the findings on the individual surveys, an overview of the interview findings is provided for two reasons: one, the data are often used together and thus the uses of the data for policy analysis and decision making need to be discussed in a holistic mode. Second, there are certain common problems with compilation and use.

INSTITUTIONAL CHARACTERISTICS

This directory is used to some degree by everyone involved to any significant extent in research on, or marketing to, higher education as a directory since it provides the names of key administrators and addresses. It is a handy reference on higher education institutions because of the detailed information it provides about schools, programs, size, and other institutional characteristics. However, many scholars also use such directories as Peterson's, the American Council of Education's, and Lovejoy's. In general, most users felt that the directory was adequate and reasonably accurate. There were not too many complaints about its timeliness. Some of the interviewees thought that the directory's usefulness could be improved by providing more information on student/faculty ratios, sources of revenue, current expenditures, and size of programs. However, there was no consensus on increasing the scope of the book. In general, most interviewees did not believe the scope should be increased to the extent that it would compete with commercial directories which generally provide more information on student characteristics and admission requirements. One interviewee suggested that the directory is underused by high school counselors. This may be. However, most counselors generally have one or more of the commercial directories in their bookcases and a volume of literature from many colleges and universities. The directory or mailing lists produced from HEGIS tapes are used by commercial publishers, banks, and other businesses with services to sell to institutions.

FALL ENROLLMENT AND COMPLIANCE SURVEYS BY FIELD, SEX, AND ETHNIC GROUP

Data from these surveys are probably used more than the other HEGIS data files in reporting on and analyzying the condition of higher education.

Since funding in both the private and public sector follows number of students to a considerable degree, enrollment data is the first measure of how an institution, a sector of higher education, or the total industry is faring. The data when used in conjunction with resident/migration data, degrees conferred, and census data can provide information on the impact of affirmative action programs and to a very limited degree, financial aid programs on enrollment trends in respect to equality of educational opportunity for disadvantaged and advantaged sectors of the population.

It is this researcher's impressions both from the interviews and from the review of the literature that these data are not being as fully exploited for this type of evaluation as they might be.

More generally, the data are used to report on trends or the status of various sectors of higher education and to analyze trends by sector. At the institutional level, enrollment by field or course has a major impact on programmatic decisions in both the short and long run in terms of resource allocation, setting admission and recruitment policies, and monitoring performance in relationship to institutional objectives, including institutions' action, recruitment, attrition, market share, etc.

At the state level, the data often provide one of the bases for programmatic decisions and for resource allocations by institutions and, in some cases, among sectors of higher education (public and private).

When used for programmatic and resource allocation decisions at the institution and state level, it is not generally identified as HEGIS data when it flows to the legislative and executive levels. This lack of attribution is reasonable since data on enrollments and degrees would or should be collected (and are generally compiled in more detail than HEGIS requires) for institutional and state level decision making. However, it appears that institutional, state and regional data on enrollments for decision making are generally collected and classified according to HEGIS definitions.

At the institution, state, regional, and national levels, the data are used in conjunction with manpower demand projections from the Bureau of Labor Statistics and demographic data from the Bureau of the Census. The Bureau of Labor Statistics uses both enrollment and degrees conferred data to estimate the supply side of manpower planning. National and state agencies such as the National Occupational Information Coordinating Committee (NOICC) and its counterparts, State Occupational Information Coordinating Committees (SOICCS) are using HEGIS data extensively for analyses of manpower requirements.

At the national level, data are used extensively both in reporting on the condition of higher education and as a framework for proposing policy. These uses are discussed more fully later in the overview of the findings from the interviews. In reporting on the condition of higher education the data generally first appear in NCES news releases, later in the *Chronicle of Higher Education*, and almost simultaneously in major national newspapers and news magazines; subsequently, it is used in journals; later it appears in books. Quite often the data, after analysis by educational associations, are reported in news releases and journals. In many cases, the data are then attributed to the researcher or association which did the analysis. The Educational Associations quite often "scoop" NCES or the Department of Education in the release of analyses based on HEGIS reports inasmuch as some of the associations have highly qualified analytical staffs who work with press releases of HEGIS or HEGIS-like data from institutions, state agencies, or with HEGIS computer tapes. In the overview, the importance of analysis and interviewee's perspectives on survey design and analysis are discussed.

Problems

The interviews supported the findings of the Validation Study just completed by NCES that the data are accurately reported and that there are no major problems in its compilation. However, some institutions have difficulty in classifying students in respect to ethnic membership and there are variations in distributing non-respondents by ethnic group. Generally, non-respondents are distributed according to the distribution of respondents. However, at least one school conscientiously takes a sampling of non-respondents and has found that non-respondent ethnic membership varies significantly from that of respondents. At least one researcher in the field of compliance with affirmative action also feels that there is not sufficient breakdown by race. However, the problem of identifying membership by group increases significantly as membership is more and more tightly defined.

There are some problems at institutions with the definitions of full- and part-time students and the computation of full-time equivalent students. Variations in reporting students or conversion problems for the school (if they count students according to NCES definitions) occur for two reasons: 1) the diversity of schools in respect to quarters and semesters, and 2) differences among schools in classifying students as full-time. Many schools consider a student as full-time if he/she is taking nine hours; others use twelve or fifteen hours. For most schools' accounting purposes, a full-time student is one who pays full-time tuition and fees, whether or not the student is taking 9, 12, 15, or 18 hours. Some inaccuracies also occur in the counting of first-time freshmen. Students may or may not report to a school that they have been enrolled in a previous institution.

RESIDENT AND MIGRATION DATA

The results of this survey are reported extensively in the literature but did not appear to be used much by the interviewees. Educational planners at the state level are highly sensitive to the relationship of these data in terms of projecting funds for financial aid and assessing the attractiveness of the state schools in relationship to out-of-state schools.

Problems

The interviews turned up little concern with the data in terms of compilation and use. There are problems in determining whether a student is a resident or a migrant. This problem is partially a function of interpreting definitions, but more often how a student classifies himself.* For example, one student, who was a migrant from New York, wanted to be treated as a migrant from New York (and thus entitled to financial aid from that state) and also as a resident of the state where he was going to school (so he could obtain financial aid from that state).

---

*Generally, the masculine terminology has been used as a generic for person.

DEGREES AND OTHER AWARDS CONFERRED

Data from these surveys are used regularly in reporting on the condition of higher education and in the development of public policy, particularly in the area of manpower planning. Generally data for the latter purpose are used in conjunction with Bureau of Labor Statistics data on demands of the society for manpower in various industries and occupations, data from the HEGIS survey on enrollments, and Bureau of Census demographic data. At the national level the major user of HEGIS Degree and Enrollment data for manpower planning is probably the Bureau of Labor Statistics. However, the National Occupational Information Coordinating Committee at both the national and state levels (through related state committees) has begun to use the data extensively for developing recommendations on manpower and post-secondary program requirements to meet those needs. While the art of manpower planning is in its infancy (despite some years of experience), the increasing sophistication of data bases and practitioners appeared to some of the interviewees to be providing for improved forecasting of both supply and demand. As interviewees observed, the accuracy of projections (or even reports of demand and supply) progressively declines from a reasonable degree of validity where degrees and certificates are closely lined to an occupational field (for example, diesel mechanics or psychiatry) to such degrees as history which may provide the base for working in several fields or simply be preparatory education for vocational or professional training.

Data on degrees, diplomas, and certificates are also being used with increasing frequency to investigate the status of women and minorities in industry and higher education (along with faculty and staff salary data) through trend and comparative analysis. The data are also used in conjunction with enrollment to develop rough approximates of attrition for evaluating the success of institutions and the enterprise in retaining students by group memberships. Industry is using degrees conferred data as well as enrollment data to: (1) identify sources of man or woman power by type of occupation, sex, and ethnic membership; (2) make decisions concerning where to recruit and locate plants; and (3) evaluate employment status in relationship to affirmative action goals and availability of appropriate man/woman power. These data and enrollment data are also used by states and regions in recruiting businesses to locate in their areas.

Problems

There do not appear to be major problems with the data in respect to accuracy and compilation. Some researchers on students and affirmative action believe the data are collected and aggregated at too high a level as far as group membership is concerned; others would like more information on age.

Problems are encountered in using the data with enrollment for estimating attrition by sex and ethnic group; start-up costs for computer programming are high and there is the problem of defining attrition--drop-out vs. stop-out vs. program attrition vs. school attrition.

Variance in organization and tuition policies among schools may also be introducing some error concerning the number of degrees awarded. For example, in some cases a student may obtain a degree in two fields simultaneously; depending on a particular school's policies, or program policies within a school; both or only one degree may be reported. It is obviously difficult to adjust such data. Another problem more or less outside the control of institutional data gathering pertains to students who simultaneously or sequentially obtain more than one degree in the same, related, or different fields of study, particularly if they are obtained from different schools. In manpower planning and in assessing the availability of personnel to meet affirmative action goals, which degree should be counted? If both are counted, the availability of personnel in a given field is overstated; if only one degree is counted (and if it is not the operational degree as far as the individual's occupational goals are concerned) the availability of personnel in one field may be overcounted while the availability of personnel for another field may be undercounted. These types of problems can be solved through supplementary statistical sampling of individuals and analysis. The error is probably not significant in relationship to other difficulties associated with manpower planning.

FACULTY AND STAFF

Faculty and staff salary data are obviously interesting to faculty and staff as a report on the condition of their profession and themselves individually. The data are also required by administrators as they strive to compete in the market place for faculty and staff and/or to maintain an equitable relationship between their institution's pay rates and others'. The interviews indicated that HEGIS data are not used directly by most institutional planners for these purposes for several reasons. HEGIS surveys obtain average salary by rank. This is not sufficient, since there are large variances among disciplines in competitive salary scales. Moreover, the diversity of education in terms of funding, location, mission, and quality also creates large differences in competitive salaries among institutions. In general, most every institution (and the faculty of an institution and discipline) is not interested in overall averages but are concerned about the salary in those disciplines or institutions that they judge to be peer disciplines and institutions. Competitive salaries are also affected by such variables as the cost of living and opportunities outside of higher education in a region.

Several state and institutional planners both in the private and in the public sector have developed a listing of peer institutions and disciplines and either informally or through formal groups trade data on salaries among each other. At the institutional level, these data may come off the HEGIS form for the institution.

Many planners and analysts find the process of obtaining faculty salary data by peer institution and discipline time consuming. They would use HEGIS data gladly for doing salary analysis if the following conditions were met: (1) they could obtain on order the salaries of what they deem as peer institutions and disciplines; and (2) they could be provided with such data in time for budget planning.

Problems

The data gathered by the surveys on total employees and faculty did not appear to be presenting any major problems to interviewees in respect to accuracy and timeliness. Faculty salary data are published by AAUP approximately ten months after it is collected through the HEGIS stem. AAUP extensively edits the data and checks out discrepancies with institutions prior to publishing its report.

It should be noted that the data gathered by HEGIS and reported by HEGIS and AAUP are generally a report of academic-year faculty salary and do not necessarily reflect total faculty earnings including income earned at the institution for the teaching of summer courses and for doing grant and contract work. Moreover, in at least one case, it appeared that reports on faculty salary for faculty on 12-month contracts were not a function of workload but of the faculty simply wishing to have their nine-month salary distributed over a 12-month period. The above problems do not appear to be of general concern.

A problem that was raised by one interviewee was the matter of differences in the definitions of rank. There are a few cases where an associate professor in one institution is comparable in respect to salary and tenure to the assistant professor at the majority of institutions. These are isolated cases, but might affect comparisons at the institutional level if one school were to compare the salaries of its associate professors (as typically defined) with another school's associate professors who, in terms of experience and tenure, were comparable to assistant professor ranks at the first school. The cases are so few that it should not affect reporting by sector nor for the total population. It could affect comparisons among peers, but other factors complicate such comparisons more than this particular one.

FINANCIAL STATISTICS

Data gathered by the Financial Statistics Survey are probably among the most used (after enrollment) for analyzing the condition of higher education by sector and by institutions. The uses of these data and the progressive development in both their extent and sophistication of use are described in the review of the literature. Data are used in conjunction with enrollment data to provide indicators of financial health and quality. Other financial ratios have been developed in order to get indications of financial status both by sector and by institution. A few private firms are engaged in using HEGIS data, with or without auditing it and adjusting it for differences in reporting procedures, to advise institutions on their status. Scholars are using indicators derived from this and other HEGIS surveys to report on the financial status or health of higher education as a whole or by sector. Trend and comparative analyses are generally done. Yet the data from this survey are considered the most suspect of all the data gathered by HEGIS.

Problems

The financial data are distrusted in part because of the uses to which they are put and in part because of differences among states and institutions in organization, accounting practices, and/or interpretations of HEGIS financial terms. However, there was general agreement that the accuracy of the data had improved significantly since 1974 when a new survey was initiated for two reasons: (1) it is difficult, if not impossible, to do trend analyses for the seventies because of the great differences between the pre-1974 and post-1974 form, and (2) data on financial aid funding was lost in the changeover. However, the financial aid data (this researcher suspects) was probably very incomplete since it is almost impossible for an institution to account for aid given directly to a student. While most interviewees recognize the need for (and/or the inevitability of) revisions to survey questions and format, they view the process as costly for those schools who utilize data processing extensively, and confounding for trend analysis. The cost problem probably cannot be avoided, although improved programming technology and management should eventually reduce what is now perceived as high costs of programming for changes in surveys. The second problem could be minimized by better annotation and cross-walk programs for making appropriate adjustments as survey forms change. NCES appears to be aware of both problems and appears to be taking steps to minimize the effects of changes in survey forms and/or formats.

At the national level, most interviewees agreed that HEGIS finance data were accurate enough to make judgments about the financial condition of higher education as a whole and perhaps by sector. There is considerable disagreement about whether the data are accurate enough to make comparisons among states and institutions. Some highly respected scholars, who have used HEGIS for comparisons among institutions (while recognizing problems) feel that it is sufficiently accurate for such a purpose. Others, and this includes researchers who consult with higher education institutions for the purpose of making comparisons, feel it is too inaccurate (see Minter, 1979). Some institutional planners also believe the data either are not accurate enough or in sufficient detail for such comparisons with the public sector. States that appear to be doing well (from HEGIS or reports based on HEGIS) in supporting higher education often point out that HEGIS data may be overstating or understating the amount of state support because of differences in organization, funding, and accounting practices among states or because of differences in quality of institutions or programs. The problems with financial reports appear to derive from basic differences in organization, funding, and accounting practices, rather than inaccurate reporting at the institutional level or inadequate compilation at the NCES level. These problems are being documented by the Joint Study Group on the Utility of HEGIS Finance Data. The findings from the interviews support the conclusions that are being drawn from this group's extensive study (see various issue papers published by the Joint Study Group in 1979 and 1980).

LIBRARIES AND FACILITIES

Results of a mail survey and statistical analysis of the literature indicate that data from the two HEGIS surveys, Library and Facilities, are used almost as extensively as that from any of the other surveys. However, the conventional review of the literature and interviews with two librarians and two facility planners indicate that these data are used very little at the institutional and state level for planning and budget analysis. The two librarians who were interviewed did not consider the HEGIS data useful and/or appropriate. They did not consider it useful because of the type of data collected, the way it was estimated, and also because of the problem of selecting out data for peer institutions. Librarians want to compare their library to what they believe are peer libraries rather than a universe (or even a subuniverse) of libraries. At least, according to the two interviewees, librarians use the statistical data provided by library associations and their own formal or informal methods of surveying peer libraries for budget justification and internal evaluation.

The two facility planners who were interviewed about the HEGIS facility survey form were aware of the survey and that one had not been taken since 1974. They gave no impression, however, that they had not used HEGIS data for the 1974-75 survey to any great degree but indicated that they used either NCHEMS/WICHE and/or state guidelines for evaluating and developing recommendations for space. Institutional researchers and scholars who were interviewed had less knowledge and/or involvement in the completion of these surveys than of the others. Yet many of the interviewees expressed concern that discussions of excess capacity in higher education have obscured (at least among the public and legislatures) deferred maintenance and depreciation, increasing energy costs, programmatic and technological obsolescence, and current policy in respect to the handicapped in regard to equipment, facilities, and libraries.

ADULT AND CONTINUING EDUCATION

Little data were obtained from the interviewees on this HEGIS survey which is conducted irregularly and uses a sample of institutions. There was general awareness that adult and continuing education is having an increasing role to play in higher education. Since adult and continuing education may have substantial impact on the health and direction of higher education, any statistics in this area are eagerly pursued.

OVERVIEW OF FINDINGS FROM INTERVIEWS

ON THE USES OF HEGIS DATA

The pattern and time sequence that were followed in conducting the interviews permitted the continual testing of hypotheses formulated during the review of literature and the development and subsequent testing of additional hypotheses. The principal investigator also had three opportunities to present his preliminary findings from the interviews and literature to diverse audiences of institutional researchers, HEGIS coordinators at the state level, and researchers using HEGIS data for financial analysis of the condition of higher education. While this overview of the findings from the interviews is drawn primarily from the interviews, it has been influenced by other information gleaned from the comments of these several audiences. Essentially, the interviews confirmed the original hypotheses set forth in the beginning of this chapter. This overview highlights only the most critical aspects of HEGIS as determined from the interviews.

Influence on Public Policy

The interviewer, contrary to his expectations, found no one to disagree with perhaps the most important hypothesis drawn from the literature, i.e., that HEGIS is a necessary and much used statistical foundation for reporting on the condition of higher education and the development of public policy at the national level. Midway through the interviews, the investigator began to ask, "How is HEGIS used in the development of policy?" and formulated a schema or pattern which he tested progressively through the interview cycle, particularly with those that he felt were influencing and were knowledgeable about how public policy was developed.

There appears to be a general pattern in policy development that leads in diverse ways to the writing and passing of law and/or changes in institutional behavior with or without the encouragement of law. As Norman Cousins has eloquently argued, "ideas have lives of their own."

While much law and policy appears on its face to be a function of crisis and/or opportunism, there is evidence that these crises either are projected or anticipated (and there is a slight difference) by leaders in a particular field and/or by scholars and researchers working either independently or for foundations, special interest groups or associations (if there is a difference) some years ahead of the crisis or at least for the resolution or attempted resolution of a crisis. It should also be noted that policy development does not necessarily have to be implemented by the writing of a law. In higher education, there has been considerable law written to support higher education in the furthering of national interests. At the same time, states and institutions have also acted on their own to implement policy either through state law or changes in institutional behavior. From reviewing the higher education literature, it appeared to this investigator that law or changes in institutional behavior (with or without the encouragement of law) occurred some years after attention was drawn to an impending crisis in higher education by scholars working independently or for foundations and educational associations. A leader in the field of reporting on the status of higher education and providing policy recommendations has been the Carnegie Commission on the Study of Higher Education. This is not to gainsay the contribution of other foundations, including Ford and Kellogg(to name just two) and special commissions supported by foundations, federal, state, or institutions. However, the work of these (with notable exceptions) have been more oriented to solving problems or to supporting innovation or special needs than to policy development. In some cases, the work of scholars has preceded a crisis or perceived crisis by many years. A prime example of this is the early warnings of Cartter in 1965 that higher education was producing too many Ph.D.s for the potential job market in higher education. His warnings were not taken seriously for several years.

By the early seventies, however, it was possible to see (or no longer possible to ignore) the decline in birthrates and thus the eventual decrease in the traditional market for higher education. From this statistic, there developed a major body of literature on the overcapacity or projected overcapacity of higher education and what the decline in market, the variance in tuition rates, and the dissatisfaction with job opportunities portended for higher education and the private sector, in particular. The more imaginative scholars proposed new policy.

By the mid and late seventies there had been considerable change in resource allocation, funding patterns, and institutional behavior. This is not to suggest that all of the law dealing with higher education or all of the change in institutional policy or behavior that occurred in the seventies has been strictly from a need to support higher education as an enterprise in itself. For significant change to occur either in the reallocation of resources or funding through law at the federal or state level or in institutional behavior, there appears to have to be a confluence of forces--for example, high unemployment rates in a certain age sector, increasing demand for resources from another area, a national security crisis, and/or dissatisfaction with a general or specific condition. Thus it is generally impossible to show a specific cause-and-effect relationship between public policy and some set of statistics and/or some scholarly work. However, there is enough coincidence between the studies using HEGIS data--as used in reports of educational associations, the many conferences that go on among experts in the fields of higher education, labor and economics, news releases, the testimony of witnesses at Congressional hearings, and scholarly works--to suggest that the data, sometimes in very raw form and sometimes rigorously and finely analyzed, provide the base for shifts of emphasis in public policy as reflected in new ways of funding institutions, writing affirmative action rules and regulations, pursuing the enforcement of such law, and/or institutional behavior. Certainly the forecast of decline in enrollment from the traditional market for higher education caused federal agencies, educational associations, and institutions to reconsider the purposes of higher education, broadening financial aid programs to support part-time students, and changing curricula and marketing approaches.

Quality of HEGIS Data

There is no overall statement that can be made about the quality of HEGIS data for this varies in terms of accuracy and timeliness among surveys. Judgments about its quality are also affected by the use to which HEGIS data are put. Almost everyone who uses the data agrees that the data are published either in machine readable form or in hard copy publications much too slowly after collection. Hard copy reports are generally published one to two years (sometimes more) after the years for which the data were collected. These published documents are used probably much more often than computer tapes or EDSTAT by most scholars, outside of those working for educational associations and government agencies. Moreover, even these scholars appreciate a desk reference for answers to quick questions from a fellow scholar or a government official. There is also general dissatisfaction with the dissemination dates for computer tapes. These are released 6 to 12 months after the collection deadline. There are, of course, explanations for the delay in disseminating HEGIS data. There is the problem of the late, incomplete, or inaccurate returns which require NCES to follow up; there is the time involved in processing and editing returns. Then there is an extended clearance and scheduling cycle, particularly for hard copies.

Most interviewees viewed these explanations sympathetically, but were still concerned about timeliness, noting that it is becoming increasingly important to monitor changes. Generally, interviewees would have some degree of completeness and accuracy sacrificed for a more rapid dissemination of statistics on the status of higher education. Incidentally, the problem of timeliness has a serious effect in use of the data at the institutional level.

Accuracy of HEGIS Data

Most interviewees agreed that HEGIS data from all surveys were accurate and complete enough to make judgments about the condition of higher education at the national level and probably among the public and private sectors of higher education. Also, it generally was agreed that all surveys, with the exception of the financial survey, were accurate enough for analysis and comparisons down to the institutional level except as noted below:

1. Some researchers in the area of affirmative action impacts believe that data on ethnic membership are aggregated at too high a level.

2. Given the increasing number of part-time students, there is probably insufficient information on part-time enrollments and there are some computation problems.

3. Faculty salary data are inadequate for making decisions at the institutional level about faculty salaries since these data are not collected by discipline. Also, there probably are discrepancies in the compiling and computation of faculty salaries, particularly when medical school salaries are reported. More data on part-time faculty are required. Faculty salaries for nine-month faculty probably are understated since no data are collected on summer stipends.

4. Interviewees reported that they did not use facility and library data at the institutional level for making decisions because they had other sources. At the national level, there is concern about the status of facilities and libraries; however, this interviewer sensed that the current facility and library surveys do not support analyses on the condition of facilities and libraries, in part because they are out of date and in part because they do not ask the right questions. These findings from the interviews are supported by the conventional review of the literature, but are contradicted by a survey of institutions and a statistical analysis of the literature which demonstrated that reference to HEGIS data in these areas was approximately at the same level as for other surveys.

Financial survey. As shown in the review of literature, the use of data from the Financial Survey has increased significantly in the last few years. In using financial data, researchers generally compute such operating ratios as current revenue:current expenditures or costs per student. The first ratio comes from data in the financial survey; the second uses data both from the financial and enrollment surveys. Thus the data from this file form the base for some of the more sophisticated analyses on the condition of higher education. Yet many scholars distrust the financial file for more than estimates of financial conditions at the national level and perhaps for such sectors as private and public education. It appeared to this interviewer after several interviews, participation in conferences on the Utility of the Financial Survey, and a review of the literature, that part of the suspicions concerning the accuracy of this file stems from pre-1974 experience. Recent users of current financial data (with a few notable exceptions) tend to believe that the file can be used to make comparisons among states and perhaps among institutions. Strongly opposed to this view is John Minter who documents his concerns in a series of articles in the Business Officer (1979) and in a letter to the interviewer. Yet the use of the file, despite Minter's arguments, continues and this work is done by consultants to institutions as well as by researchers in educational associations and investigators working for the government.

The Politics of Comparisons with Other Institutions

Interviewees engaged in providing information to support requests for state appropriations or for funding from private sources are concerned that HEGIS may be used for invidious comparisons because of misinterpretation of the HEGIS data. As one interviewee noted, those states who are behind the curve in faculty salaries, state appropriations for students, or other such measures, like to be compared to national averages or to those states and institutions that are doing better than they. States and institutions who appear to be doing better than others, because of good fortune or differences in institutions, quality of programs, purpose, or accounting methods, do not favor such comparisons and, as noted, there is still considerable diversity among institutions and states in many factors. Thus, there is extreme sensitivity about the accuracy of HEGIS data. It is important that the limits of the data be fully understood by even the most unsophisticated interpreter of higher educational statistics. This is an impossible dream. However, almost all interviewees believed that the National Center of Education Statistics could help analysts and state and institutional planners by more fully annotating the data. The proceedings of the Joint Study Group on the Utility of HEGIS Finance Data suggest that progress is being made in identifying critical differences in organization and accounting methods among states and institutions, thereby providing information for appropriate annotations and caveats.

More HEGIS Needed?

There was general agreement that HEGIS does not provide sufficient data in certain areas that are critical for analyzing the condition of higher education and for developing policy in respect to higher education; namely, the outputs of higher education, the impact of financial aid programs, and faculty and student characteristics. For many years, panels and advisory committees convened by the National Center of Education Statistics have recommended that data in three of these areas (outputs, students, and financial aid) be sought and published.

Outputs. There are, of course, severe difficulties in defining the outputs of higher education, much less in measuring them. However, the literature, as well as the results of the interviews, suggests that there is increasing concern about measuring outputs, in terms of value added in respect to measures as achievement, aptitude, student perceptions of quality, faculty or administrator's perceptions of quality, persistence of students, etc. These measurements are now being conducted to a limited degree by institutions themselves and by scholars. The question is: Should NCES provide leadership in this area by instituting a study to define measurements of output and design a survey for obtaining such data? Should NCES support surveys by independent agencies and scholars, thereby ensuring that the data would become part of the public domain of information about higher education? Despite the concerns expressed in the literature about outputs, many are reluctant for NCES to collect and disseminate such data because of the difficulties in defining and measuring output.

Student characteristics. The art of determining student and faculty characteristics and reporting them in relationship to institutions and sectors of higher education is somewhat better than the art of assessing outputs. Many commercial directories of higher education institutions provide some data on student characteristics. Individual scholars and institutions from time to time collect data on the characteristics of students. The Bureau of Census obtains some data on student characteristics, unfortunately not linked to schools. The Cooperative Institutional Research Program is conducted regularly among cooperating institutions to pretest entering freshmen on possible outcomes and to record personal characteristics. Unfortunately, these surveys and others of less magnitude are limited in scope because of funding problems. Moreover, data from the studies are not as accessible as they might be if NCES either collected the data itself or funded and then disseminated the data collected during the studies. Several interviewees were concerned about the resultant overhead costs if NCES did the surveys themselves. Interviewees tended to agree that it would be useful if NCES provided more funding for such studies and acted as a broker in disseminating the raw data.

Financial aid. Almost everyone is unhappy about the amount of data or lack of data on the effects of financial aid programs on the health of various sectors of higher education, student decisions concerning selection of colleges, the ratio of financial aid revenue derived by institutions from financial aid programs, directly or indirectly, etc. Much of the desired data can be obtained only by surveying individual students. Studies to this end, but of limited scope, have been conducted. Other information about the impact of financial aid exists in the program offices of the Department of Education. The difficulty is that much of the existing information either is not accessible or is too limited. Almost all interviewees agreed that the NCES should give high priority to developing a data base that would permit better assessment of financial aid programs by funding students, conducting its own surveys, and acting as a clearing house for information drawn from the Department of Education offices.

Burden on Institutions and Other Matters Related to Collection

A recurrent complaint with all forms of federal intervention into the business of the states and institutions through the collection of the data is the cost of such collection and the perceived and actual threat to institutional and state autonomy. Information is power and almost any collection schema tends to encourage the creation of central staff because of the requirements for moving power, control, and costs up one or several levels from where the work, whether it be teaching or the installation of a gadget, occurs. However, there is some level of costs that is acceptable and necessary for the benefits deriving from having a body of information for planning, coordination, and decision making by the individual consumer, the institution, the state, and the federal government. Yet there will always be argument and resistance to almost any form of intervention and this is probably healthy. It provides one means for weighing costs vs. benefits in data collection.

One of the questions that this study sought to answer was an estimate of how much of a burden did present data collection by HEGIS impose. This question can only be answered qualitatively, since costs for HEGIS data cannot be isolated fully from the costs that would be incurred by an institution or state in collecting its own data for decision making. It was clear from the interviews, from the review of the literature, and from scanning minutes of board meetings, administrative conferences, and legislative hearings that either HEGIS or data very similar to HEGIS are used for making decisions about the allocation of resources among institutions and disciplines, salaries and positions, facilities, libraries, etc. Institutions regularly build formal or informal information sharing committees or consortia to trade information on salaries, facilities, costs, and other matters. Individual institutions or groups of institutions use consultants to analyze their financial status in relationship to the financial status of the sector to which they belong using HEGIS or similar data. Regional boards serve the interests of institutions, businesses and state agencies by collecting and analyzing data gathered either through HEGIS or very similar data. Among planners, a common complaint with HEGIS was its lack of detail on salary by discipline, its tardiness in relatiohship to the state or institution's planning and budget cycle, and its difficulty in accessing. Therefore, it appears clear that HEGIS data or HEGIS-like data would be collected by institutions and states if there were no HEGIS. Therefore, the question of burden appears to be a function of two variables: the costs of reporting in HEGIS format according to HEGIS definitions and the costs of maintaining separate information sharing schema because of problems associated with the timeliness of HEGIS releases and accessibility in terms of making peer comparisons. While there are some major differences, particularly in the financial area, in counting* practices among institutions as a function of institutional purpose and policy, it appears that there is general agreement at both institutional and central levels that common definitions and counting practices are beneficial. Moreover, it appears that institutions and states are regularly using HEGIS definitions and terms in counting enrollments, facilities, dollars, and such other matters. HEGIS has provided the impetus for developing a common set of terms and practices for data sharing among institutions and among states, whether or not HEGIS data are used. There was also evidence that HEGIS data are quite commonly used in this data sharing process among institutions and by institutions with the public long before they are formally published or disseminated by NCES. Several instances were discovered where institution and state planners answered queries from the public, from other institutions, and internally, by referring to HEGIS reports on their institutions. Many states and institutions publish "fact books" that are clearly derived from that institution's or state's reports to HEGIS. Quite often, these fact books are simply more timely than the NCES released HEGIS reports because the institutions or states have processed and published data from their reports to NCES at the same time that they were--or prior to--forwarding it to NCES.

Universe vs. Sample Data

While most interviewees recognized the merit of sampling versus the collection of data from the universe in terms of timeliness, depth, and accuracy, all agreed that it was necessary that universe data be collected.

---

*The term "counting" rather than "accounting" has been used generally in this paper since the latter term is generally associated with finance and certain (but not all of the surveys) do not "account" for some statistics with the precision that is sought in the finance area.

There is still much diversity among institutions and states in terms of purposes, governance, funding, location, enrollment practices, etc. Almost any type of economic stratified random sampling that can be envisioned would result in extremely small samples in the many different categories of states and institutions. There appear to be one-of-a-kind institutions and there are certainly one- or two-of-a-kind of institutions in many states. Therefore, the hypotheses that certain surveys could be better done through sampling was rejected. However, several interviewees suggested that it might be sufficient to obtain universe data on certain surveys every four or five years, rather than every year and to use samples during the intervening years. Several of the HEGIS surveys, of course, are made only every two to four years; however, the results of these surveys have not been updated by sampling during the intervening years.

Another proposal was for HEGIS to supplement the universe surveys by drawing samples for intensive analysis of their counting and reporting processes. This approach would enable NCES to more fully document the error in HEGIS reports, resulting from practices and procedures, purposes, policies, governance, and funding practices. It would probably encourage more conscientious counting and reporting by institutions.

It is also clear that certain data that are wanted about outputs, student and faculty characteristics, and the impacts of financial aid programs probably can not be obtained economically or effectively solely through surveys of institutions. Either NCES or the institutions as an agent of NCES (in the non-pejorative sense of the term) will have to take a sample of students and faculty in all likelihood for these surveys when and if they are introduced. Incidentally, but at the very practical level, those responsible for the compilation of HEGIS reports generally are opposed both to the sampling and to the collection of data on other than a yearly basis.

Some of the practical burdens in completing HEGIS reports are changes in taxonomies and survey questions and formats. More and more institutions and states are programming their data processing systems to assist in completing the HEGIS reports. Thus, changes force reprogramming and extensive changes can create costly reprogramming. Moreover, there is a continuous learning curve, involving personnel from many areas: admissions, finance, facility planning, and others, in when and how to complete HEGIS reports. The turnover in personnel and, thus, the cost of this learning curve does not appear to be as great as it was in the early seventies; however, irregular scheduling of HEGIS reporting or extended periods between scheduled reporting would increase the learning curve, probably significantly. Therefore, those engaged either in compiling and/or coordinating the compilation of HEGIS data would prefer it be done regularly so they could handle the production of reports systematically, and maintain necessary systems and procedures.

Accessibility of HEGIS Data: How Can the Uses of HEGIS be Improved?

While interviewees who work regularly with HEGIS data are no longer encountering major problems in interpreting and programming HEGIS computer tapes, there is still considerable unfamiliarity with what can be done with HEGIS computer tapes in terms of analysis. While the costs of the tapes (approximately $100) seem excessive to one expert in data processing, there are probably more scholars and planners in the field of higher education that shy away from the use of HEGIS because of the overhead costs that occur whenever data is processed on an irregular or one-time basis. There are the costs of learning what tapes are available and when and how they can be ordered. There are the costs involved in learning what tapes contain in the way of statistics. There are the costs of writing some form of input and output program. To the regular user of HEGIS, these costs may appear to be insignificant; to the busy planner, the graduate student, or the scholar, who has not handled the HEGIS files, they may be overwhelming. Thus, many planners and some scholars were amazed to learn that eight or nine peer institutions could be easily separated out of the overwhelming mass of data that they envision from lifting the directory on colleges and universities. Moreover, their amazement is justified. Reporting for a selected group of institutions can be done easily only if one has a prepared program and the computer power required to handle the HEGIS files, which are massive because of the substantial mass of data available and their format.

Several profit and non-profit firms are now involved in solving the problem of accessibility by analyzing HEGIS data for institutions. The availability of such services does not appear to be generally known. Several interviewees believed that it would be useful for NCES either to provide such services or (more often) act as a broker of such services. Progress is being made in institutional and state use of HEGIS through their own data management and analysis or through the purchase of such service. However, only a few scholars and even fewer graduate students are regularly using HEGIS for studying higher education. Therefore, there needs to be much more extensive work done in disseminating information about data processing services and bringing the prices for such services down so that scholars, graduate students, and small institutions can afford them for use in studying and evaluating the effects of higher education policy and institutional behavior on selected small populations of institutions, sexes, and ethnic groups.

CHAPTER IV

FINDINGS FROM SURVEY OF INSTITUTIONS, HIGHER EDUCATION INSTITUTIONS, STATE AGENCIES AND KNOWN USERS

Introduction

This chapter reports the results of surveys of two distinct populations. One of these populations consisted primarily of higher education institutions and state agencies involved with coordination or control of higher education in their state. The design that was used to select a sample of these institutions is described in Chapter I. The second sample consisted primarily of known users, drawn from a group of purchasers of HEGIS computer tapes or Educational Data Statistics (EDSTAT) services.* Because of the distinctness in the questionnaires and populations that were sampled, the results of the two surveys are reported separately in this chapter. Generally the findings from the surveys are compared with what was learned from interviews and the review of the literature.

FINDINGS FROM SURVEY OF INSTITUTIONS AND HIGHER EDUCATION STATE AGENCIES

As described in Chapter I, results of a general survey of higher education institutions and state agencies were analyzed to report how and for what purposes institutions and agencies were using data from HEGIS. Since this survey was conducted by an independent researcher who has permitted the project to use her data, the findings from this report come from a secondary data source. However, the researcher augmented her sample using the sample and the design developed by the project. Her questionnaire covered those questions for which the project required information. A copy of her questionnaire and the responses to each question are given in Appendices B and C. The sample design is described in Chapter I.

The following is a summary of what institutions and agencies reported about HEGIS. Before the analysis reported here was completed, a test for consistency in responses was made. Several questions were repeated in different formats on different pages in the survey. As a result, it was possible to compare information provided by respondents' replies to several pairs of questions. Questionnaires on which conflicting replies were given to similar questions were to have been excluded from the analysis. This was not necessary, however, since answers were consistent.

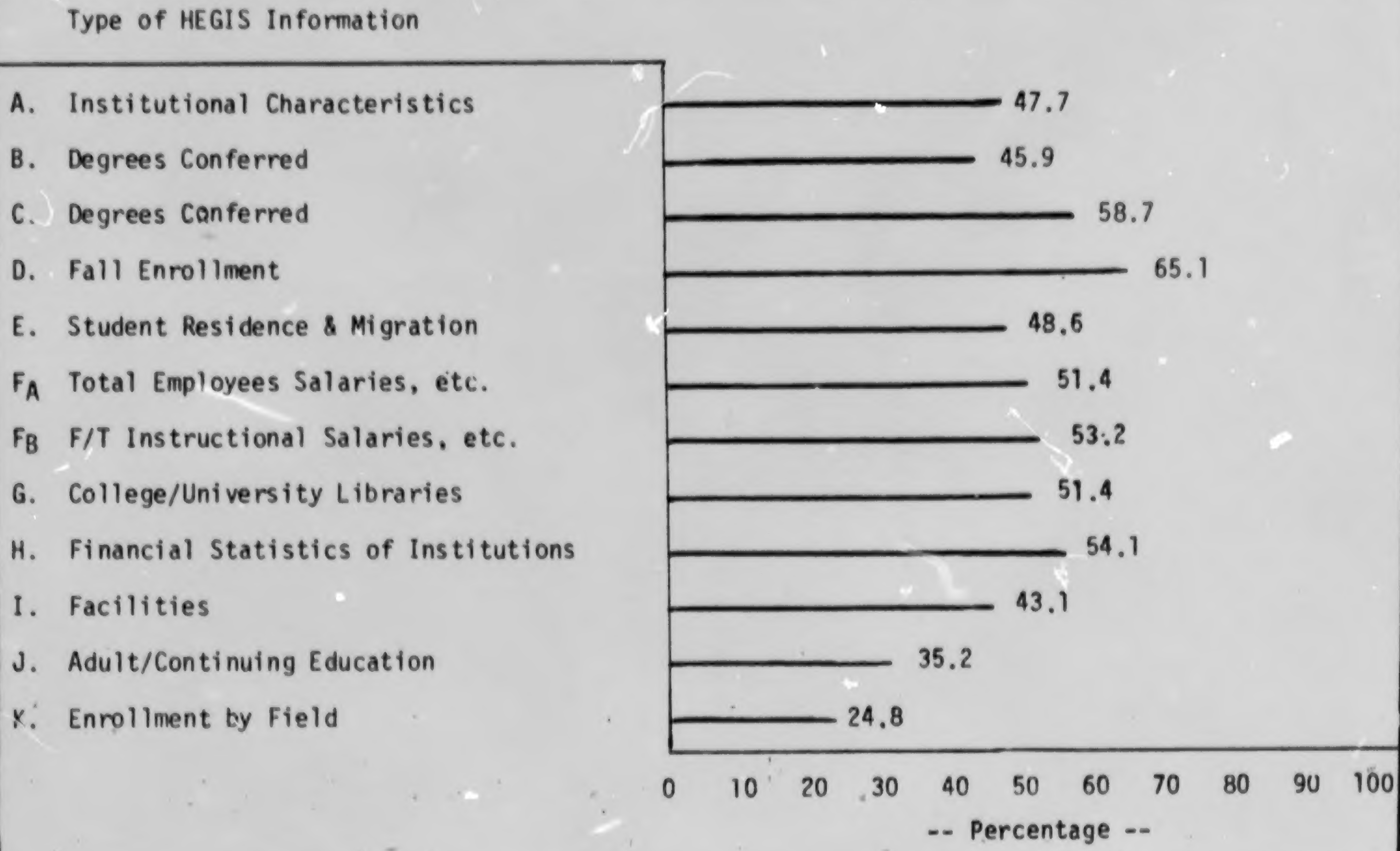
Frequency of Use

In Figure 4.1, the percentage of respondents who used HEGIS data one or more times is shown by type of data used. According to this sample, enrollment data are used most frequently (65%) by the higher

---

*Their selection is described in a latter section of this chapter.

FIGURE 4.1 Percentage of General Survey Respondents Reporting Use of Various Types of HEGIS Information (N = 109)



education community of institutions and state agencies. This finding is similar to that determined from review of the literature and from the interviews which are reported in Chapters II and III respectively. As noted in these chapters, enrollment data generally provide the base for most funding to both private and public higher education, whether it comes from tuition or from a combination of state appropriations and tuition. Thus enrollment trends are a sensitive indicator of how an institution or sector of higher education is faring. Moreover, the data from this survey--when used alone, or with data from other HEGIS surveys, Bureau of Labor Statistics on manpower demand, and demographic data from the Census Bureau--can provide indicators concerning higher education's service to various segments of the population and the condition of higher education. The data are useful for forecasting, planning and evaluation.

The next most used data were Degrees and Other Formal Awards Conferred, which 58.7 percent of the respondents utilized. These data are commonly used for programmatic decisions as well as for evaluating the condition of higher education and its service to the greater community. In certain states, funds are distributed to support private higher education institutions on the bases of degrees awarded by institutions. It is essential data for manpower planning and, when used with enrollment data, can provide an indicator of attrition.

The third most used data were Financial Statistics and Institutions. Like enrollment and degrees awarded data, this survey provides a means for monitoring the relative health of institutions and provides indication of size of institutions. The language of the third data base, money, is a well known one. This can be a problem if money is used as the sole measure of distinctness among institutions or sectors of higher education--a concern of many institutional and state planners who fear that the public or legislators will compare expenditures among institutions or states without taking into account differences among these entities. (See Chapter III for a further discussion.) The fear of invidious comparisons grows when data from this survey are based with data from other surveys to product unit cost information.

Least used HEGIS data, according to survey respondents, were those dealing with Adult and Continuing Education, which only 35.2 percent reported using; and the now discontinued Enrollment by Field/Post-baccalaureate and Upper Division data, which was reported used by 24.8 percent of respondents. The Adult and Continuing Education survey is an ad hoc survey, which may explain in part why data were not used more. This matter is discussed more fully later. Other types of HEGIS data were reported to have been used by 43.1 percent to 54.1 percent of the survey respondents. The geometric mean of these percentages was 49 percent.[1] The level of use by respondents for each type of data is shown in Table 4.1.

As shown in Table 4.1, a large percentage of the respondents reported that they never use the data. The survey questionnaire probably provided a snapshot of use by institutions and agencies rather than a description of use over time. Thus, the three most infrequent surveys--facilities, enrollment by field (discontinued), adult and continuing education--are reported as being used less than any other data. It is also likely that institutions and state agencies have less use for these data and for institutional characteristic data than for the other sets of information. Also, the responses probably do not include such uses of data as reporting in fact books by institutions and state agencies or the answering of brief queries by telephone either from news media or other institutions that were identified during on-campus interviews. It is likely that the answers to the written questions generally reflect use of data for planning and/or evaluation and perhaps in reporting to executives or legislatures. However, direct use of HEGIS data for the latter, according to interviews, is minimal at the state and institutional level (but not federal level) because states and institutions tend to use their own data, which generally provide much more detail, when supporting budget requests or making decisions about allocation of resources.

According to the review of literature, data on adult and continuing education enrollments are being used increasingly for considering the condition or projecting the condition of higher education. However, the number of users of these data are relatively small; thus the level of usage for this data, as well as for such data sets as libraries and facilities, will be relatively small when reported for the total population of users. This caveat applies to much of the statistical analysis on uses of data.

Frequency of use, as determined from questioning users and counting publications, provides but one measure of the importance of data, probably a poor measure. A much more important measure is how data are used and for what purposes. Thus, the statistics in this chapter must be read and considered in relationship to what was learned from the conventional review of literature and from interviewees about the purposes for which various data segments are used. For example, the frequency of use of Adult/Continuing Education data is relatively small according to all of the surveys (of literature, interviews, and written questions) used in

---

[1] Note that the geometric mean, not the arithmetic mean, was used in this calculation. (Cf. Paulumbo, D. J. Statistics in Political and Behavioral Science, Columbia University Press, New York, 1977).

Table 4.1

Use of Various Surveys

How often have you used data from the following HEGIS surveys?

	1. Never	2. Once	3. Two to five times	4. More than five times
	------ Percent ------			
A. Institutional characteristics (2300.1)	48	12	18	22
B. Degrees and other formal awards conferred by discipline, sex and level (2300.2.1)	31	19	24	26
C. Degrees and other formal awards conferred by discipline, race, sex and level (2300.2.1)	34	20	30	16
D. Fall enrollment by discipline, race, sex and level of student (2300.2.3)	28	14	23	35
E. Residence and migration of students (2300.2.8)	47	21	19	13
F. Employees: salaries, tenure and fringe benefits				
Total Employees (2300.3) (Incl. faculty)	44	18	21	17
Full-time Instructional Faculty (2300.3)	40	13	25	22
G. College and university libraries (2300.5)	44	26	21	9
H. Financial statistics of institutions (2300.4)	41	14	24	21
I. Facilities (2300.7)	54	18	19	9
J. Adult/Continuing Education (2300.8)	60	20	14	6
K. Enrollment by field/Post-baccalaureate and Upper Division (Discontinued in 1977) (2300.2.9)	72	9	11	8
Geometric Mean	49	16	20	15

this study. Yet the impact of adult and continuing education (current and projected) is becoming a matter of ever increasing concern to the higher education community. At this time, data in this area are being used primarily for forecasting possibilities and considering policy. At the institutional level it may be used for market planning and may even have (in certain cases) some effect on budgeting. However, this data set has neither the general appeal of enrollment statistics nor the effect of such statistics on decisions affecting budgets.

Types of Uses

Perhaps a more compelling issue than whether or not people use HEGIS data is why they use this information. In other words, it would be useful to know the reasons that HEGIS clients need to have the data that HEGIS provides. Data when not used are simply data; data when used become tools to reduce uncertainty. Therefore, one of the foci of this study was the identification of the reasons people have for accessing HEGIS-generated data. Analysis of the general survey revealed that respondents used various types of HEGIS data for a variety of purposes.

Most frequently, respondents said that they used the data for "Independent (Department) Research." The data are used less frequently for comparative purposes in examining enrollment, faculty salaries, space and libraries (see Table 4.2). This finding generally corresponds to what was learned from the interviews and from the review of literature. According to these surveys, the data are used for analyzing the condition of higher education, for reporting to the public on an institution or sector, or for developing policy. The first and third purposes are closely related to what is generally done in departmental research. According to interviewees, HEGIS data are not used very often to justify budgets or to make comparisons among institutions for the following reasons: (1) the collection and reporting of HEGIS data are generally out of sequence with budget planning cycles (in the short run) thereby creating a timing problem; (2) there is a lack of detail (for example, faculty salary by discipline is more commonly wanted than average faculty salary for an institution); and (3) institutions and states make peer comparisons more often than comparisons against an average for a sector or whole of higher education. Thus some firms usefully serve institutions by accessing HEGIS or HEGIS-like data files to provide peer comparisons. Several interviewees indicated an interest in such services.

Purposes in Using HEGIS Data

While HEGIS data are not generally used in the budgeting process, they are used for planning and for informing the public. Forty-nine percent of the respondents reported using information about faculty salaries for informing policy makers; eight percent used data for

Table 4.2

Types of Uses

How often have you used or analyzed HEGIS data for the following reasons?

	1. Never	2. Once	3. Two to five times	4. More than five times
	------ Percent ------			
A. Independent (Department Research)	53	6	24	17
B. Sponsored Research	69	7	13	11
C. To justify budgets				
(1) Internally	61	16	14	9
(2) With state agencies				
(a) by comparing institutional enrollment with others	68	13	13	6
(b) by comparing faculty salaries with others	70	14	13	3
(c) by comparing office, class and laboratory space with others	77	15	7	1
(d) by comparing libraries with others	80	13	5	2
D. For analyzing an institution's share of the student pool in comparison with similar institutions	61	17	17	5

Table 4.3

Purposes - Policy Making

How often have you used or analyzed HEGIS data by type of survey for the following purposes?

	1. Never	2. Once	3. Two to five times	4. More than five times
	Percent			
A. For showing legislators, executive agencies or other policy makers (including staff) how the following items compare with other institutions:				
(1) faculty salaries	51	21	19	9
(2) percent of faculty tenured	62	19	14	5
(3) residence and migration of students	64	20	11	5
(4) degrees and other formal awards conferred by:				
discipline	55	20	18	7
race	61	20	14	5
sex	65	17	12	6
level	57	20	15	8
(5) fall enrollment by:				
discipline	52	19	22	7
race	59	18	16	7
sex	56	19	16	9
(6) classified employed salaries	69	16	12	3
(7) library quality	62	25	12	1
(8) financial status	60	17	17	6
B. To analyze the mix of students by discipline in your institution with the mix of students by discipline in similar institutions	67	15	14	4

comparing percent of tenured faculty at other institutions with the percent tenured at their own. HEGIS data were also used for comparative purposes in reports to policy makers in the areas of residence and migration of students (36%); degrees and other formal awards conferred (between 35% and 45%) by discipline, race, sex and level of award); and by fall enrollment (between 42% and 48%) by discipline, race and sex. (See Table 4.3.)

Based upon these findings, it would appear that HEGIS data are used by institutions to influence the policy making process. The data are used in department (independent) research (47 percent) and in sponsored research (31 percent). (See Table 4.2.) It is probable that such departmental research is accomplished both at the administrative levels of planning and institutional research and at the instructional level.

Still another use of HEGIS data seems to be for planning at the state, institutional and program levels. Use of this information seems to increase as the focus of use becomes smaller. For example, 41 percent of general survey respondents reported using HEGIS data for "Planning" at the state level, while 60 percent reported using the data for this purpose at the institutional level. However, less than half (46%) of the respondents said they used the data for programmatic planning. (See Table 4.4.)

Yet another use of HEGIS data surfaces when institutions report on the evaluations of their affirmative action programs with respect to regional or national norms. In these areas, general survey respondents said that they used the data for regional comparisons (33%) and national comparisons (28%) in making reports. The frequency of use for these purposes is shown in percentages in Table 4.4.

Comparisons by Users by Use

By comparing responses to certain pairs of questions, additional insight into the utilization of HEGIS data was gained. The following section discusses the results of the cross tabulations of selected responses to pairs of survey items. However a caveat in this section is in order. The analyses are useful for showing how institutions and researchers use data; however they tend to give the impression that the data are more used than indicated earlier. This occurs because comparisons are being made between identified users and uses whereas the earlier analyses were reporting the extent of use as a percent of the total sample.

Degrees conferred by discipline, race, sex and level with use of HEGIS data to evaluate affirmative action programs. Nearly 19 percent of the survey respondents who reported using HEGIS data dealing with degrees

Table 4.4

Purposes - Management

How often have you used HEGIS data (your own or others) for the following management purposes?

	1. Never	2. Once	3. Two to five times	4. More than five times
	------ Percent ------			
A. Planning				
(1) at the Federal level	69	9	11	11
(2) at the State level	59	9	20	12
(3) at the Institutional level	40	14	25	21
(4) at the Program level	54	11	21	14
B. To evaluate progress on affirmative action programs through comparisons				
(1) with regional norms	67	19	9	5
(2) with national norms	72	15	8	5
C. To compute financial indicators				
(1) for analyzing faculty and staffing patterns using comparative statistics	68	11	16	5
(2) for comparing revenues to expenditures	64	18	8	10
(3) for comparing costs per student	58	16	18	8
D. To evaluate staffing patterns for personnel actions	76	15	6	3
E. For facilities planning of:				
(1) classrooms	72	15	8	5
(2) housing	82	10	2	6

awarded to sub-groups of the population also reported that they did so in order to monitor the effect of their affirmative action programs, with respect to regional norms. Similarly, almost one quarter of the respondents reported that they used HEGIS data to evaluate affirmative actions programs with regard to national norms.

Based on these results, it would appear that numerous institutions rely on HEGIS data to compare the impact of their affirmative action programs to that of other programs in their regions and throughout the country.

Financial status of institutions. About 18 percent of the respondents who reported using HEGIS data regarding the financial status of institutions indicated that they used financial indicators, and 44 percent of the users of these data reported that they used the information for comparing costs per student among reporting institutions.

Apparently, colleges and universities find it important to compare themselves to one another. HEGIS data dealing with "Degrees Conferred" by discipline, race, sex and level were used by 50 percent of the respondents who used this information to analyze "the mix of students" (in their own institutions) in comparison to other institutions. Fifty-two percent of the respondents made this same comparison using the HEGIS "Fall Enrollment" data.

Such comparisons are frequently made to inform outside policy makers about the status of an institution. Thirty percent of all respondents using HEGIS "Financial Statistics" information reported that they used it "For showing legislators, executive agencies or other policy makers (including staff) how (they) compare with other institutions." Twenty-three percent reporting said they used the HEGIS "Library" data for this same purpose, and 5 percent of the respondents using HEGIS "Employee Salary" data did so to inform policy makers about the status of their institutions in comparison to others.

Use of Merged Data Bases

Apparently, relatively few of the users merge data for any purpose. According to the sample contacted by mail survey, 72 percent reported that they had never merged data and only 21 percent said that they had merged data more than once. In other words, most users of HEGIS data seem to be interested in a one-dimensional representation of what the data reveal, which would indicate that their purposes in using the data are descriptive rather than analytic. However, it must be kept in mind that the number of users who report never having merged HEGIS data includes those who may never have used HEGIS data at all. Those who do merge data appear to merge many different data bases (see Appendix F).

The most common mergers are of enrollment and degrees awarded data which would provide indicators of attrition or persistence. The second most frequent merger is enrollment and/or degrees awarded with the financial data set, which would supply unit costs. Curiously, the library data set has been merged with degrees awarded, full-time instructional faculty, and resident and migration data sets. The returns on mergers indicate that only a few attempts are being made to merge data, but that experimentation to identify indicators using several types of mergers is underway.

Respondents' Ratings of the Quality of HEGIS Data

When they were asked to rate HEGIS data in terms of its quality, respondents criticized timeliness and comparability most. This finding corresponds to criticisms of HEGIS at NCES sponsored conferences and what was learned from the interviews. The problems of timeliness and comparability of data to local norms or peer institutions are discussed at length in Chapter III and in Chapter V.

The returns do contradict the popular impression that HEGIS is perceived as being inconsistent or inaccurate (see Table 4.5). Eighty-five percent or more of the respondents rated it acceptable or better in the categories of accuracy and 89 percent for consistency over time. These findings are supported by the interviews. Thus the impression that one obtains from "gripe" sessions on HEGIS of "terrible" problems is probably wrong. Yet there is considerable complaining about HEGIS. This may be primarily a function of frustration resulting from the timeliness problem and difficulties in making peer and regional comparisons.

Several other questions on the general survey were asked in order to obtain additional insight on what respondents perceived to be the major weaknesses and strengths of HEGIS. The strengths, according to respondents, are the national universe of the data, the consistency of the data, and the completeness of the data or perhaps the completeness of the universe. As might be expected, timeliness is seen as the major weakness of HEGIS. (See Table 4.5 for a tabulation of responses to these and other questions concerning quality.)

The questionnaire also attempted to get at the question of quality by asking what other data bases were used and why. This sample and the special user sample generally use the same data bases in lieu of HEGIS for many of the same reasons. Association or regional data bases are used in lieu of HEGIS because they are more timely, more accessible, or more closely related to what is wanted. Answers to the above questions are tabulated in Appendix C. Since responses to these and other open ended questions were similar to those that were received from the survey of special uses, comments on these questions are discussed more fully in the next section.

Table 4.5

Ratings of HEGIS Quality

For your purposes how would you rate HEGIS data on the following characteristics? (Please circle the appropriate number of the response for each of the following items.)

	1. Poor	2. Acceptable	3. Good	4. Very good
	Percent			
A. Timeliness	47	35	15	3
B. Accuracy	15	35	36	14
C. Sufficiency of detail	17	34	33	16
D. Comparability of categories with local groupings	41	33	23	3
E. Consistency of categories over time	11	36	40	13
F. Identifiability of similar institutions	36	33	24	7

Universe Versus Sample Surveys

As is often the case, data users prefer complete universe counts to sample surveys despite the prolific literature supporting the accuracy of inference. The respondents to the general survey indicated a preference for total universe counts except in those areas where information held only limited interest for them; e.g., "Facilities" and "Adult and Continuing Education" (Table 4.6). The reasons for wanting universe data are more fully explicated in Chapter III, but they primarily involved (1) problems resulting from sampling if one wants to make regional, state or peer institution comparisons, and (2) management of reporting.

Frequency of HEGIS Data Collection

General survey respondents preferred HEGIS data on a frequent basis, especially such sensitive data as "Fall Enrollment" or "Degrees Conferred" (see Table 4.7). This finding confirms the notion that the more important data are to consumers, the more they want the latest available. More than 60 percent of respondents wanted annual, rather than bi-annual or quarti-annual data collection of HEGIS data, in such areas as "Degrees Conferred," "Fall Enrollment," "Full Time Instructional Staff Salaries" and "Financial Statistics" for institutions.

According to the interviews, management of the data collection cycle is also simplified if surveys are made annually. Scholars not involved in collecting, but in using the data, saw advantages in collecting universe data less often if the data were updated by sampling in intervening years. However, this would probably create problems in managing data collection.

FINDINGS FROM SURVEY OF KNOWN USERS

From January, 1978 through July, 1979, 498 HEGIS tapes, preliminary and final, were purchased by departments of federal and state governments, quasi-governmental associations, educational institutions and associations, business/commercial concerns and private scholars.

Contrary to the findings reported earlier on the popularity of various data sets at the state and institutional level, the most popular data set according to purchases was the Institutional Characteristics survey, commonly referred to as the Directory (see Table 4.8). This tape includes information on each institution's telephone number, address, congressional district, FICE identification code, fall enrollment figures, undergraduate tuition and fees, sex distribution of the student body, calendar system, control on affiliation, highest level of offering, type of program, accreditation, names and titles of principal officers, and their areas of functional responsibility.

Table 4.6

Universe Versus Sample Surveys

For your purpose which of the following require a universe survey rather than a samply survey?

	Statistical Sample	Universe
	--- Percent	---
a. Institutional characteristics (2300.1)	43	57
b. Degrees conferred by discipline, race, sex, and level (2300.2.1)	44	56
c. Degrees conferred by discipline, sex, and level of student (2300.2.3)	43	57
d. Fall enrollment by discipline, race, sex, and level of student (2300.2.3)	37	63
e. Residence and migration of students (2300.2.8)	69	31
f. Employees: salaries, tenure and fringe benefits		
Total Employees (2300.3) (including faculty)	56	44
Full-time Instructional Faculty (2300.3)	48	52
g. College and university libraries (2300.5)	73	27
h. Financial statistics for institutions (2300.4)	45	55
i. Facilities (2300.7)	69	31
j. Adult/Continuing Education (2300.8)	77	23

Table 4.7

Frequency of Data Collection

For your purpose which of the following surveys should be conducted annually, every other year, or every four years?

	1. Annually	2. Every Other Year	3. Every Four Years
	----Percent----		
a. Institutional characteristics (2300.1)	47	26	27
b. Degrees conferred by discipline, race, sex and level (2300.2.1)	62	30	8
c. Degrees conferred by discipline, sex, and level (2300.2.1)	69	25	6
d. Fall enrollment by discipline, race, sex, and level of student (2300.2.3)	87	11	2
e. Residence and migration of students (2300.2.8)	25	43	32
f. Employees: Salaries, tenure and fringe benefits			
Total Employees (2300.3) (including faculty)	57	34	9
Full-Time Instructional Faculty (2300.3)	62	31	7
g. College and university libraries (2300.5)	20	51	29
h. Financial statistics for institutions (2300.4)	62	31	7
i. Facilities (2300.7)	11	32	57
j. Adult/Continuing Education (2300.8)	36	50	14

The differences in popularity for data sets as measured by general survey responses and purchases are an indication of the differences between the population sampled by a special survey and the respondents whose answers were analyzed earlier. The respondents to the special users survey generally have national interests which lead them to use the directory as a reference whereas state and institutional planners have less interest in a reference book. They generally know their peer states and institutions.

The second most popular tape was Opening Fall Enrollment/Compliance, followed closely by Degrees Conferred. The enrollment data are grouped in four major categories: Summary tables, enrollment by level of institution, enrollment by state, and enrollment by institution. Earned Degrees includes actual degrees conferred, with counts of sub-baccalaureate awards by field and sex.

The tapes ranking fourth and fifth in popularity were Financial Statistics and Employees in Higher Education respectively. Physical plant assets, by type of asset and balance on transaction; indebtedness on physical plant, by balance on transaction; and endowment, by value on income, are the major questions addressed in the Financial survey.

Employees comprises two instruments: an annual request for summary data on salaries and fringe benefits of instructional faculty and selected administrators, and a biennial request for counts of employees in these and nonprofessional categories.

The remaining purchases of survey tapes are of less frequency. The Upper-Division and Post-Baccalaureate Enrollment survey (referred to as the Advanced Degrees tape by the Data Systems Division, NCES, and also known as Enrollment by Field) was discontinued following the 1976-77 survey. The information gathered in this survey was, for the most part, retained through the Degrees Conferred.

The Libraries survey provides information on holdings, staff, expenditures and services. The Physical Facilities survey has been completed six times, and Residence/Migration on three occasions. These two surveys are purchased infrequently by HEGIS users.

From the list of 168 purchases (see Appendix F) of the computer tapes listed in Table 4.8 and some of the more widely cited authors of publications, a sample of 30 users was drawn to receive a specially designed questionnaire. This sample was selected according to the following criteria: membership in one of several groups and types of data purchased or used.

The survey that was mailed to the sample sought to obtain insights on five major issues:

Table 4.8

HEGIS Tape Purchases, January, 1978 Through August, 1979
(N = 498)*

Tape Name	Frequency	Percentage
Institutional Characteristics (Directory) Form Number 2300.1	163	32.7
Opening Fall Enrollment/Compliance Form Number 2300.2.3	88	17.7
Earned Degrees Form Number 2300.21	85	17.1
Financial Statistics Form Number 2300.4	63	12.7
Employees in Higher Education Form Number 2300.3	46	11.2
Upper-Division and Post-Baccalaureate Enrollment Form Number 2300.2.9	20	4.0
Libraries Form Number 2300.5	13	2.6
Residence/Migration Form Number 2300.28	6	1.2
Physical Facilities Form Number 2300.7	4	0.8
		100.0

*Source: Data Systems Branch, NCES, J. Dorfman, August, 1979.

- Purpose for which HEGIS data were used.
- Primary and secondary users of the data
- Views and criticisms of HEGIS data in relationship to use.
- Recommendations for additional surveys.
- Technical problems and approaches in using the HEGIS files.

Purposes for Using HEGIS Data

Data from this survey of known purchasers of HEGIS data support findings from interviews, the review of the literature, and the general survey that HEGIS data are used most extensively for analyzing the condition of higher education using enrollment projections. (See Table 4.9 for rank order of uses of HEGIS data by purpose.) The second highest use of HEGIS data according to these users is to analyze and report on the status of private higher education. This question was not asked in the general questionnaire. The findings from the interviews and literature generally support this ranking since financial analysis, which ranks second in terms of "importance of use" in the literature was generally an outcome of concern about private higher education.

Findings from this survey and from the literature indicate a difference in the ordering of manpower planning and analyzing the financial condition of higher education. Financial analysis permeates recent higher education literature for two reasons: (1) it provides a means, other than enrollment, for reporting on the condition of private higher education and, for that matter, all of higher education, and (2) concern about the status of higher education has fostered considerable research in identifying and working with financial indicators. Therefore, the findings of the literature suggest that finance data from HEGIS are used very extensively. The findings from this survey indicate that HEGIS is used more for manpower planning than for analyzing the condition of higher education through financial analyses. The difference between these findings can probably be attributed to different biases in the methodologies followed in doing the user survey study and the review of the literature.

The review of the literature was biased by the population of literature reviewed--generally, but not always, formally published books, articles, and reports. The user survey population was biased towards

Table 4.9

Rank Order List of Purposes for Using HEGIS Data[*]

1. Enrollment projections
2. Status of Higher Education by private sector
3. Manpower planning
4. Investigating financial conditions of higher education
5. Status of Higher Education by public sector
6. Facilities planning
7. Market planning and analysis
8. Library planning
9. Status of Higher Education, in adult and continuing education
9. Status of Higher Education, in vocational/technical education
9. Other

[*] Number one (1) is the most widely used purpose.

those who would use HEGIS data for decision making, for reference, and for internal reporting, either verbally or by memoranda rather than for publishing.

The difference in results is also probably a function of the size of the population which works in the area of manpower planning. There are probably fewer writers and thus less publications in this area than in the general field of higher education where writers are required to use enrollment and finance data when reporting on the condition of higher education.

The interviews tend to support the findings from this survey that a major use of HEGIS by corporations and government agencies is in the area of manpower planning. The review of literature and interviews generally support findings from this survey with two exceptions. The conventional review of the literature and the interviews discovered little use of HEGIS data for facility and library planning; however, a statistical sampling study of the literature did uncover uses of data from the facility and library surveys.

Uses by Types of Organizations

Table 4.10 is a rank ordering by purpose within groups of users. The rank order by purpose for associations indicates that HEGIS is used for all of the purposes that were listed--financial conditions, manpower planning, enrollment projections, market planning, library planning, facility planning, and reporting on the status of all sectors of higher education. The results are about what would be expected, since the associations, representing all sectors of higher education, are interested in all facets of the total sector as well as particular sectors. The emphasis given to enrollment projection, status of private higher education, and adult and continuing education is in general conformance to current areas of concern in higher education.

Reports to the state boards represent what one would think would be their primary interests--first, enrollment, status of private and higher education, and facilities planning; second, financial conditions and manpower planning.

Reports to private enterprise reflect the purposes that one would expect, except that manpower planning does not appear. Some of the interviewees reported evidence that private enterprises used degrees and other awards conferred as well as enrollments for evaluating their compliance with affirmative action goals. The interviewees are probably accurate in their reports since the survey probably did not reach personnel or affirmative action offices. Moreover, it appeared from the interviews that these offices generally get the information by telephone query of NCES surveyors or from published material.

Table 4.10

Uses of HEGIS Data Rank Ordered Within Groups by Purpose (1 = most used)

Purposes	Rank Order of Frequency				
	Quasi-Governmental and Association	State Boards	Institution/ Scholars	Federal Government	Private Enterprise
(1) Investigating financial conditions of higher education	2	2	3	1	---
(2) Manpower planning	2	2	1	2	---
(3) Enrollment projections	1	1	2	2	1
(4) Market planning analysis	3	---	1	---	1
(5) Library planning	4	3	3	---	---
(6) Facilities planning	4	1	---	---	---
(7) Status of higher education					
(a) by private sector	1	1	3	2	---
(b) by public sector	2	1	3	2	---
(c) in adult and continuing education	3	3	---	---	---
(d) in vocational/technical education	4	3	---	---	1
(8) Other	3	---	2	2	---

Criticisms and Suggestions

A matter of continual controversy in information gathering and reporting is the conflict among the objectives of completeness, accuracy and timeliness. In a perfect world, there would be all three; but in the real world the three objectives cannot be met simultaneously since completeness and accuracy are in inverse ratio to timeliness. The results of the survey (see Table 4.11) reflect the status of this controversy. Users are divided almost equally on the questions of timeliness vs completeness and accuracy. However, timeliness seems to have an edge over completeness since 82 percent of the users questioned would sacrifice completeness by publishing data without the responses of states and institutions who do not meet the survey schedule.

A very important finding from this survey is the large percentage of users who indicated that NCES should use merged data to report on the condition of higher education. This recommendation raises some questions: Is the art of financial indicators stable enough to report on the condition of higher education? Does this recommendation imply that NCES should do more analysis than it is currently doing? This last question was also raised during the interviews.

The interviewer tested the hypothesis that NCES should do more analysis of HEGIS data and argued that this would contribute to improved quality control, greater familiarity with problems in the HEGIS files, and leadership in using HEGIS data for analysis.

When the argument that NCES should develop greater analytical capability was first presented, most interviewees were reluctant to agree. They cited the following reasons: (1) that data collection and analysis should be kept separate since analysis can lead to setting the questions (to be avoided since the first bias in any study is what "one decides to study"), (2) that a government agency which does analysis is subject to political pressure (i.e., to analyze the data so that politically expedient answers are produced), (3) that it was an idle argument since NCES, or at least that section associated with the surveys, was underfunded and understaffed as it was, and (4) that analysis was outside the charter of the data collection arm.

However, the interviewees tended to reconsider the question after giving a quick response and to argue that the NCES should be doing more analysis. One interviewee noted that the federal government produced economic indices that were generally consistent despite political and economic cycles. Almost all agreed that quality of data followed analysis; i.e., the more analysis one does, the more conscious one becomes of discrepancies in the data, the more sensitive one becomes to research questions, and the more concerned one becomes with accessibility.

Table 4.11

Response to Questions Concerning Criticisms and Suggestions for Improving the Collection of HEGIS Data

		Agree	Didn't know	Disagree
(1)	Completeness should be sacrificed in the interests of timely delivery.	45%	10%	45%
(2)	To improve timely delivery:			
	a. Missing data should be imputed or estimated by the National Center for Education Statistics during the edit of input from colleges.	50%	7%	43%
	b. Colleges and/or states which do not report on schedule should be identified in the edited tapes and publications as having failed to supply necessary data.	82%	6%	12%
(3)	The National Center for Education Statistics should begin to use merged data to report the conditions of higher education in terms of financial indicators.	62%	19%	19%
(4)	The National Center for Education Statistics should investigate the feasibility of chartering profit or non-profit institutions to distribute HEGIS data on computer tapes.	55%	30%	15%
(5)	Student data should be collected by HEGIS on the following:			
	--means and standard deviations of scores on admission tests.	26%	9%	65%
	--means and standard deviations on government-financed financial aid awards.	38%	15%	47%
	--means and standard deviations on private or institutional financial awards to students.	30%	15%	55%
	--% of student body receiving financial awards.	55%	13%	32%

The literature and interviews suggest that the accessibility of HEGIS files is not well known beyond a small coterie of HEGIS compilers, state planners, and highly specialized researchers. Several interviewees indicated that they would use HEGIS data if someone supplied them with statistics on the peer institutions.

Student Characteristics

From question 5 in Table 4.11 it is obvious much more data are wanted from HEGIS on financial aid programs but that there is a reluctance to have HEGIS enter the field of collecting data on admission scores. Interviewees involved in policy analysis overwhelmingly agreed that HEGIS should be extended to collect data on financial aid; but, like the respondents to this survey, they were also concerned about HEGIS' collecting data on such student and school characteristics as admission scores.

Technical Evaluation of HEGIS

Table 4.12 summarizes the responses to technical questions concerning the use of HEGIS computer tapes. Only a few questions require commentary.

As would be expected, most users (93%) had to make some modification to the HEGIS computer tapes prior to using them. None of those who made modifications had to convert the tapes for change in density, to recopy a bypass label, or otherwise modify the tape characteristics. Generally, the changes were necessary for reformat or to eliminate certain variables.

Seventy-seven percent of the users found that the documentation was adequate for using the tapes. According to interviews with current and former users of HEGIS data at the programming level, the current documentation is adequate, but the documentation provided in the early seventies was very poor. It should be noted that reports on the adequacy of the documentation are probably reliable but biased since most interviewees and respondents to this survey were generally experienced programmers and HEGIS users.

The interviewer sensed from the interviewees (all but one of whom had extensive experience with HEGIS) that there might be a considerable learning curve in working with the files if one did not have large file experience. This learning curve is probably no greater than what would be encountered with any strange large file. However, even experienced HEGIS programmers indicated that it was sometimes necessary to consult with the NCES programming staff. They also indicated that difficulties were sometimes encountered in getting advice. As might be expected, these difficulties were a function of distance from Washington, D.C., and of experience in working with NCES.

Table 4.12

Questions and Responses Concerning HEGIS Data Tapes

	Percent of Responses	
	Yes	No
1. If you had to modify the data file, would you have preferred to have the work done according to your specifications by NCES?	43	57
2. If yes to above question, would you have been willing to pay an extra amount to have the work done?	59	41
3. Do you feel that the documentation provided with the data file was adequate for you to fully access and utilize the data?	77	23
4. Did you have to perform any of the following modifications to the data file before you could use it?	Percent of Responses	
1. Re format, retaining all variables and cases, e.g., reblock, rearrange variables, aggregate cases.	29	
2. Convert to different tape characteristics, e.g., change density, recopy to bypass label.	0	
3. Subset, eliminating certain variables and/or cases	7	
4. No modifications required, used tape as received.	7	
5. 1 and 2	7	
6. 1 and 3	21	
7. 2 and 3	0	
8. 1 and 2 and 3	29	
5. How did you find out about the HEGIS TAPE FILES?		
1. Previous user of HEGIS data	36	
2. NCES announcement, bulletin or publication	39	
3. Notice in non-NCES publication	4	
4. Mentioned at a meeting	7	
5. Other	14	
6. Which software packages, if any, were used to analyze the HEGIS files?		
1. SPSS	40	
2. SAS	27	
3. BMD	5	
4. BMD ("P" series)	9	
5. IMSL	5	
6. Other (majority being personal or custom programs)	14	

Responses to the question on how users found out about the HEGIS computer tape files indicate that most users learned about the files from other users or from NCES bulletins. Given the bias of the sample--users--the results are what one would predict. Therefore, this finding by itself does not necessarily indicate that information about NCES is not generally available in publications that would be read by those interested in the condition of higher education or by those interested in comparing their institutions with a sector or all of higher education. However, findings from the review of the literature and the interviews suggest that this may be the case. While the review uncovered a significant use of HEGIS, practically nothing was found in the way of articles or books in the general literature on higher education describing either the content of HEGIS tape files or their availability. Actually, the best general descriptions of HEGIS data bases, outside of the specialized literature on data bases (which is not widely disseminated) were in two papers presented at conferences of institutional researchers. But again, these were not the type of papers that would be published in the general literature.

It could also be inferred from the interviews that HEGIS is known only by a very special group of researchers in the field of higher education. While the interviews, like this survey, were biased by the need to obtain insights on the uses of HEGIS from known users, this sample was less biased than the survey sample since it included doctoral students as well as experienced scholars in the field; qualitative or intuitive scholars as well as those more oriented to statistical analyses; and compilers of HEGIS data as well as planners at the vice-presidential level.

All of the interviewees knew of HEGIS; most knew the content of the files and about the tapes; however, a few did not know the contents of the files, their accessibility, or the relative ease--once start-up costs are absorbed--in addressing the files to produce institutional specific reports to answer specific research questions. Generally, the members of the latter group were either beginning researchers in the field of higher education (i.e., doctoral students) or reasonably high level administrators in planning or finance. Thus it can be inferred that information on what is available in HEGIS files and how to get the information for research and planning is not widely disseminated in literature regularly read either by doctoral students or reasonably high level administrators.

As would be expected, the Statistical Package for the Social Sciences (SPSS) and the Statistical Analysis System (SAS) were most commonly used with HEGIS.

The survey instrument also contained four open-ended questions. The responses to these open-ended questions, summarized below, generally corresponded to what was obtained from interviews (see Chapter III).

Other Data Bases

The sample was asked to cite regional and national bases used other than HEGIS. The following were most commonly named: CUPA--salaries of administrators; the University of Oklahoma report--salaries by discipline; ACRL--salaries for librarians; AAMC--data on medical schools; the various surveys of ACE; TIAA-CREF--fringe benefits; AAUP--faculty salaries (these data come from HEGIS); AAU data exchange--faculty salaries; CIC--(a Big Ten school consortia)--faculty salaries, tuition and fees, enrollment data; NSF--data on research funding; and California Community College Management Information System--all sorts of data. The respondents to the general survey--institutions and state agencies--generally named the above, but also cited such regional organizations as the Southern Regional Educational Board.

Reasons for Using Data Bases Other than HEGIS

The answers to this question corresponded very closely to answers received to the same type of question in interviews and to the general survey. Other data bases are used in place of HEGIS because of timeliness, requirements for additional detail (see interview findings on need for faculty salary data at the discipline level), and need for data from region or peer institutions.

Major Strengths

When asked to name the major strengths of HEGIS, the respondents answered much as interviewees and respondents to the general survey. The major strength is that it provides a national data base on higher education. The respondents reported that HEGIS was becoming increasingly credible as a valid source of data about education. HEGIS also was praised for its consistency and completeness. The staff of NCES was complimented also, for its efforts to be responsive while coping with built-in obstacles.

Major Weaknesses

Again the reports of the findings from the interviews and general survey were supported by the answers to a query on the major weaknesses of the HEGIS data. These weaknesses are timeliness, lack of financial aid data, limited analysis, and lack of information about the various publications and services of NCES in relationship to HEGIS. A few respondents from institutions complained about the time required to complete the HEGIS surveys. There were a limited number of complaints about quality control at the state level but not at the institutional or NCES level.

General Comments

The respondents were also provided the opportunity to make general comments about HEGIS. A few compilers from nontraditional institutions and community colleges reported that the definitions used in HEGIS did not fit their types of schools. They did not identify any specific problems; however, it is likely that what they consider to be special problems are the ones discovered during the interviews--counting of part time students and faculty; counting of students and degrees and other awards conferred by ethnic membership; the many problems related to the reporting of financial data.

CHAPTER V

WHO USES HEGIS DATA FOR WHAT PURPOSES

CONCLUSIONS AND RECOMMENDATIONS

Introduction

The purpose of this study, conducted for the National Center for Education Statistics was to determine who uses HEGIS data and for what purposes. More specifically, it was designed to learn if HEGIS is a necessary and useful data base for determining the Condition of Higher Education and for developing policy for this enterprise in relationship to national interests. Answers were sought to the following research questions:

1. What is the extent to which HEGIS data are or could be used by members of the higher education community--federal agencies and Congress, state agencies and legislatures, professional associations, scholars, institutions, disciplines, manpower planners, economists, associations of business, industry and labor, and popular media? What is the nature of the use? How are they used? Who do you know that uses HEGIS data? How do they use it? How often do you discuss the use of HEGIS data?

2. Do institutions compare their status with that of others by using HEGIS data? Do they use enrollment projections and/or degrees conferred in making decisions concerning programs? Do state legislatures or governing boards use HEGIS data for other comparative purposes?

3. To what extent are universe data required? Are data on a single institution sometimes used for comparative purposes? To what extent is such use important? How should the data be aggregated? Does the HEGIS taxonomy of institutions need further refinement?

4. Would changes in the format of the data result in greater utilization? What changes are suggested? For example, would it be useful if certain ratios were developed and reported by HEGIS? How should the data be published and distributed? To what extent are tapes being used? Are there difficulties with the format of the tapes that could be corrected?

5. How serious are the concerns about the accuracy and timeliness of the data? Would the data be more useful if made available in publications or on tape three months earlier; six months earlier? Naturally such estimates will be crude and biased; however, they will provide a necessary basis for NCES to investigate costs in relationship to benefits resulting from acquisition and publication.

METHODOLOGY

In attempting to answer these questions, several different research methodologies were employed: (1) two distinctly different types of literature review; (2) over seventy interviews of many different types of users and contributors to HEGIS; and (3) two different sample surveys of different populations of users to which the project team had access.

Literature Review

First, a review of the literature of higher education and publications concerned with some aspect of the impact of higher education on American society was conducted. In this review, two quite different approaches were employed. The principal investigator, aided by co-investigators, reviewed the major publications in the field, including books, articles, newspapers and reports. In this review, the readers attempted to determine what was being reported about higher education and the uses that were made of HEGIS data in describing and projecting possible policy for higher education at all levels--federal, state, sector, and institution.

While this process was going on, research associates drew a statistical sample of the literature as referenced in ERIC, card catalogs and other indices of the literature. These publications were screened for references to HEGIS data or HEGIS-like data on enrollments, finances, degrees, and all of the other data collected by HEGIS. The researchers sought to determine who had used the data and for what purposes. After identifying the sources of the data, e.g., NCES, SREB, educational associations, the Office of Education, and the Office of Health, Education and Welfare, they attempted to determine the extent to which the data provided a necessary foundation for the thesis of a publication--whether it be reporting on higher education or some sector thereof, suggesting a line of policy, simply setting the stage for an argument or a lecture, performing evaluation, or exciting attention to a particular problem.

The researchers noted outstanding or unique examples of the applications of HEGIS data and annotated those publications that appeared to use HEGIS data extensively or that appeared to contribute significantly to the literature on higher education, even if HEGIS data were used only slightly or not at all. The examples and annotations provided another source of information for the principal investigator in his intuitive efforts to discover the uses of HEGIS data in the literature. The statistical sample, and the coding of the literature in terms of use, provided a quantitative measure of what types of data were used in publications over a ten-year period.

Interviews

The review of the literature provided a written and statistical report on the uses of HEGIS in publications. In addition, it enabled the project team 1) to identify some of the major users of data or potential major users--key scholars, research organizations, educational associations, government agencies, and foundations, and 2) to develop types of questions to be used in interviews. Thus the literature provided a list of users and questions. To this list were added names suggested by the members of the Technical Advisory Panel. From this list of users, twenty-five individuals were selected for interviews, not including the interviews of NCES surveyors.

The initial selection of interviewees was made on the basis of the following criteria: reputation in the field of reporting on or developing policy in the field of higher education, known use of HEGIS data, experience in compiling data, and planning responsibility. Thus, the list included scholars, federal and state officials, representatives of educational associations, institutional researchers, planners, financial officers, admission officers, affirmative action representatives, and librarians. The selection was constrained to a limited degree by accessibility, time, and cost of travel.

Each interview required from one to two hours. While the interviewers used an interview guide, generally the interviews were structured only marginally. The interviewer sought information concerning the interviewee's use of HEGIS data and the interviewee's impressions or opinions of the quality and use of HEGIS in the higher education enterprise. Most of the interviewees were quite articulate with strong but thoughtful opinions about HEGIS data and their application. They usually offered other sources as possible interviewees and suggested publications that should be reviewed. The talks encompassed the field of higher education--everything from admission policies to the effects of higher education on national interests. From the first fifteen interviews, a group of hypotheses were developed about the impact of HEGIS data on the reporting and analysis of higher education and about dissemination and competitive sources of data. In later interviews, these hypotheses and others (developed in subsequent interviews) were tested.

Surveys

The review of the literature, suggestions of the Technical Advisory Panel, preliminary interviews, suggestions of NCES staff, and log of purchases of HEGIS computer tapes and EDSTAT services provided the basis for identifying two different populations to be sampled. A statistical sample of states and institutions within those states was taken. This sample was sent a general questionnaire, which included some self-checking questions, to determine what uses states and institutions had for the various data sets of HEGIS and what difficulties they encountered in using the data. This survey covered all of the research questions set forth earlier. A second sample was drawn from the log of purchasers of HEGIS data. These two samples were used by an independent researcher in conjunction with questionnaires she administered to append her own sample analysis of HEGIS uses and users.

FINDINGS

Despite the different methodologies and different populations that were sampled, there was major agreement on most issues concerning the uses of HEGIS data for analyses and reports on the condition of higher education at all levels. In reporting the findings from the review of the literature, interviews, and surveys, an attempt will be made to stay in the format provided by the research questions set forth above. However, liberties will be taken as necessary to explicate certain themes or to show relationships among questions or among the responses of one population with another.

What is the extent to which HEGIS data are or could be used by members of the higher education community?

While there is some variation in the amount of use that various data sets receive, a statistical review of the literature suggested that all of the data sets are used in from 16 to 20 percent in literature reporting on or referring to higher education. However, there is a wide variation across years on the amount of data that is used. Enrollment, degrees and other awards conferred, resident and migration, faculty, employee and finance data appear to be used more consistently from year to year though there are cycles in the use of these data. Use of library, facility, adult and continuing education, and vocational technical data have more abrupt cycles.

This suggests that use of data may follow or be influenced by the data collection cycle. The latter four sets of data are collected irregularly, whereas the former are collected yearly with the exception of staff data.

The statistical report generally confirms what was found from the conventional review of the literature: the use of finance data has grown significantly in the last few years. However, the use of all of the data sets has tended to grow progressively--probably a result of improved impressions and knowledge about HEGIS, the continued growth of higher education, and concern about the prospects for higher education.

Data from the surveys supported the results from the literature about the uses of HEGIS data. However, 49 percent of the state agencies and institutions of higher education that responded to a questionnaire about their use of HEGIS indicated that they used one or more data sets. Sixty-five percent used the enrollment data. There is a logical explanation of the difference found in percentage of use as indicated in the literature and that found in the questionnaire. Almost all of the questionnaire respondents are in positions where they are required to use some type of data on those measurements of educational status collected by HEGIS for planning, analysis, communicating to various publics or decision making. On the other hand, much of the literature dealing with higher education is not involved with the types of reports or analyses requiring a data base; e.g., texts or articles on learning theory, sociology of organizations, and curriculum design. Yet a supplementary examination, a random sample of literature that would be predicted to use HEGIS, showed that HEGIS is used regularly in Congressional hearings on higher education, The Chronicle of Higher Education, The Journal of Higher Education, and Change.

On the average, the Chronicle used HEGIS data twice per issue (with a range from 1 to 4); the hearings used the data extensively; the Journal of Higher Education used it on the average once per issue (with a range from 0 to 2). Change magazine used HEGIS slightly more than once per issue (with a range from 0 to 3.) On the other hand, Change used NSF data slightly less than once per issue with a range from 0 to 2. NSF is used extensively, however, in Science (an average of 3 times per issue with a range from 1 to 5), whereas HEGIS was not used in any of the issues sampled.

The reviews of the literature indicate that when data such as that collected by HEGIS are used, they probably come from HEGIS though they may be attributed to such sources as a quasi-government agency, an educational association, or a federal or state office other than NCES. The data may be attributed to agencies outside the federal government either because they released a subset or total set of data earlier than NCES, or converted HEGIS data into information earlier or better than NCES. However, many educational associations and regional agencies are continuing to collect their own data on enrollments (sometimes as a function of membership requirements) and other measurements (such as libraries), either because different or more detailed information is wanted than what HEGIS provides, or because of the lateness of HEGIS collection and reporting.

Dissemination

There appear to be many problems with the dissemination of HEGIS data: 1) Coordinators and data collection are frustrated by the lack of timely feedback. 2) While almost everyone in higher education seems to know about HEGIS, only a small coterie of researchers appears to be familiar with what can be done in accessing tapes to produce data on peer institutions and/or with the services available for doing such accessing. Moreover, the data are used by only a small number of researchers in universities for analyzing the Condition of Higher Education or developing policy. With certain notable exceptions, the major research that uses HEGIS data for policy analysis is being done by educational associations, quasi-governmental organizations and foundations. There is not much in the general higher education literature describing the contents of HEGIS, the availability of HEGIS files and publications, or how to use HEGIS. 3) Generally the literature does not credit NCES or HEGIS when analyses of the Condition of Higher Education are made using a combination of data sources because such analyses are usually done by someone other than NCES. The source of the data (for example, Bureau of Labor, Census and NCES) may or may not appear in a footnote; the author or organization (federal or private) which performed the analysis gets the headline or first paragraph credit.

Additional Data Wanted

There was disagreement among survey respondents and interviewees concerning the extent to which NCES should analyze HEGIS data and collect some measures of output, quality of institution, and student characteristics. However, most agreed that HEGIS should collect more data on financial aid programs despite the inherent problems in such collections, since financial aid programs are becoming an ever-increasing source of funding (directly and indirectly) to institutions and an important policy tool for improving equality of access and opportunity for students and potential students.

Generally, interviewees and survey respondents tilted against NCES collecting student characteristics, quality of institution, and output data. However, some interviewees suggested that NCES should act as a broker in collecting and disseminating data from program offices in the Department of Higher Education and that it should support data collection by organizations outside the Department.

CONCLUSIONS

Most of the hypotheses developed during the review of literature and initial interviews, and subsequently tested through further interviews, surveys, and with audiences of users, were supported. The following includes a statement of these hypotheses and the degree to which the findings supported them.

Hypothesis 1. HEGIS data have provided a foundation or base for the majority of reports and books that have affected public policy on higher education.

Almost everyone who was interviewed agreed with this hypothesis while admitting to the principal investigator that it is difficult to show a direct cause and effect relationship. As noted more extensively in the body of the report, many factors and interests contribute to the development of public policy, not least of which is the lobbying of representatives of higher education. During the process of setting policy and making law, lobbyists and analysts at both the executive and legislative levels have to consider the interests of many constituencies and conflicting priorities. However, it appears from a review of higher education as well as from other literature that ideas behind much policy and law generally precede the full development of policy and its conversion into law by several years. In higher education, for example, the Carnegie Commission for the Study of Higher Education has produced extensive studies on higher education, many of which utilized statistics from the Higher Education General Information Survey system and other sources, such as the Census, to describe the condition of higher education and provide a foundation for policy recommendations. It seemed to this author and to many interviewees that a considerable amount of higher education laws and policies in the seventies appeared to be derivatives of much of what was recommended by such foundations as Carnegie and the research sponsored by various federal and state agencies. Other evidence that HEGIS data provide a base for law is found in the extensive quotation of HEGIS data during Congressional Hearings on Higher Education (see the review of literature for examples) and reports by interviewees. Most educational associations develop voluminous reports on the condition or projected condition of higher education for their own constituencies as well as appropriate staff of Congressional committees and executive agencies. In addition, the staff of associations and of Congress work closely together by telephone and memoranda, with association staff supplying data or analyses. The data come from the association's own research, the Bureaus of Census and Labor Statistics, and from HEGIS. (For an example of how associations work with Congress, see Roark, Oct. 6, 1980, p. 3.)

Hypothesis 2. Enrollment and financial data are used much more extensively than other survey data for analyzing the condition of higher education, policy analysis, and for making decisions at state and local levels.

This is probably true. (True is used here and elsewhere in the report in a relative sense.) However, Degrees and Other Awards Conferred data are used extensively in conjunction with enrollment data for manpower planning and evaluating affirmative action programs and persistence of students. Faculty and employee salary data are reported extensively, as are tuition and fees, because of the impact on personal and institutional decisions. These data are used to some degree in policy development.

Hypothesis 3. Accuracy has improved.

Generally the accuracy of all surveys is deemed acceptable. The lone exception to this is in aspects of the financial survey. The financial survey file is probably used more than other files in making complex analyses of the condition of higher education. Moreover, there are many difficulties in reporting and interpreting financial data because of differences among institutions in government and accounting practices. Thus, reports of dissatisfaction with the relative accuracy of the HEGIS file were not unexpected. The major problems with the financial file are summarized in Chapter II. The findings were drawn from Hyatt and Dickmeyer, An Analysis of the Utility of HEGIS Financial Data, May 22-23, 1980. It seems that many of the problems with the file would probably be corrected by more extensive documentation about the accounting practices and governance of certain institutions.

What was unexpected was the relatively high esteem that surveyees and interviewees had for the accuracy of most of the files. A recent study by NCES confirms the opinion of surveyees and interviewees about the relative accuracy of enrollment and degree data. The NCES study (Westat, 1979) reported that there was less than one percent difference between survey and audit data on enrollment and degree data. However, certain caveats are in order about the accuracy of the files. Some researchers are concerned about the levels of aggregation in the files on Enrollment and Degrees Awarded. Another respected researcher believes that the financial file is more accurate than perceived relative to the other files; and that the concern about the file is a function of its extensive study and use, for she believes expectations concerning accuracy increase with the use of data. It is also worth noting that one interviewee, familiar with how library data have been collected or estimated in the past, questioned the accuracy of this file. Library and facilities data have not been reported or collected for some time and, therefore, not used extensively, at least for complex analysis, in the last few years.

Hypothesis 4. Timeliness of HEGIS data is seen as a major problem.

This was found to be a major problem with HEGIS. The delay of nearly a year or more, justified or not, between collection and distribution of data in machine processable form and hard copy publications is seriously affecting the use of HEGIS. Though there has been recent improvement in releasing tapes of certain files faster, there is still considerable dissatisfaction with the timing of releases. This dissatisfaction is reflected in findings from surveys and in the comments of researchers who work for both educational associations and institutions charged with reporting to their constituencies and/or supplying data for making administrative and budget decisions. Students of higher education also voice the same complaint. The lack of timely data, as well as difficulties in accessing the data in machine processable form (if data are not used regularly), probably leads institutions and associations to do more collecting of data through their own surveys (formally or informally) that would be unnecessary if HEGIS data were released more quickly.

However, the expectations of some institutional researchers for delivery of data to support budget proposals, etc. can probably not be met. The primary purpose of HEGIS was, and is, to report on the condition of higher education at the national level, though such reporting necessarily requires analyses of various sectors of the enterprise. But the data are also used for secondary purposes (for example, making comparisons among institutions by institutions and state agencies). These uses have occurred because the system provides for consistency in reporting on such matters as finances, degrees, and enrollment for a universe of institutions. Generally, comparative data are wanted by state agencies and institutions for budget analyses. Since the budget cycle is almost continuous at the institutional level and budget development for the next year generally begins before actual data on the current year are collected by HEGIS, institutions find that they are required to use projections and revise them as actual data are collected. These revisions quite often are occurring as their reports to HEGIS go forward to intervening agencies such as state boards, for edits and eventual forwarding to NCES for further edits. Thus, by the time NCES has the data for edit, institutions may have completed their budgeting process for the next year. The cycle and the process therefore appears to preclude NCES' ever delivering reports in time to support budget requests by institutions. Thus, what is going on will probably continue, and, in a sense, provides a use of HEGIS in a very informal way--the trading back and forth of data among institutions that they have collected for their own management or for HEGIS long before such data appear, or could possibly appear, in HEGIS reports.

This is not to excuse HEGIS from the requirement to report results of its surveys earlier. Currently, certain HEGIS data are reported in hard copy form as much as two years after the data were collected. Tapes and publications tend to be released as much as a year or longer after the data were collected. This is unacceptable. There was general consensus among interviewees that the data should be published in both machine processable and hard copy from between six months and a year (even if this meant leaving out late reporting institutions, thereby sacrificing completeness and accuracy) after collection.

Hypothesis 5. The uses of HEGIS data have increased significantly in recent years, particularly in the sophistication with which they are used.

Hypothesis 6. HEGIS data have not been used as extensively as they might be in reporting on the condition of women and minorities in higher education because overhead or start-up costs in using HEGIS data for analysis is relatively high.

Experienced users tend to disagree that start-up costs are high; but then they have already paid those costs. There has been a spurt of studies on ethnic groups and women in higher education in the last year, quite a bit of it being published and disseminated since the review of the literature was published. Thus the conclusion may not be tenable in the future.

Hypothesis 7. HEGIS is a system that would have to be invented if it were not already in place because of the increasing need for data in policy making and planning.

Everyone agreed with this hypothesis.

Hypothesis 8. More data are wanted on student characteristics and financial aid.

Without question more information is wanted on the latter. There appears to be more disapproval than approval for HEGIS collecting data on student characteristics, institutional quality and outputs. However, there is more and more demand for such data from policy makers and consumers. Data are being gathered and data bases are in place or being developed. Some interviewees suggested that NCES should act as a broker in gathering data from other Department of Education program offices, funding the collection and maintenance of data bases, and disseminating data.

Hypothesis 9. The collection of HEGIS data has had an impact on the discipline and sophistication of data collection systems at institution and state levels.

This seems to be a reasonable conclusion. It was generally agreed that this discipline has facilitated the exchange of information among institutions.

Hypothesis 10. The collection of HEGIS data does not impose a heavy burden on institutions since most of the data would be collected by institutions and/or states for management purposes anyway.

This conclusion seems reasonable although opponents of government regulation and data collection may argue with it. The interviewees did not see a heavy burden for ongoing systems. There is a distinct burden cost when changes are made in taxonomies, questionnaires (both of which can cause reprogramming) and/or changes in schedules.

Hypothesis 11. Institutions are concerned about the uses of HEGIS for comparison purposes.

This conclusion certainly holds for comparison of unit costs, resource allocation, and funding. Generally institutions do not believe the data can be used for institution-to-institution comparisons because of timeliness, or lack thereof; lack of appropriate detail; differences in organization and accounting practices; and inappropriate comparisons of unlike institutions.

Hypothesis 12. There was general agreement that data are required from all of higher education because of differences among institutions and the uses to which the data are put.

Moreover, most compilers at the institutions felt that the burden of collection would be increased rather than lessened if a sample of institutions was taken because of the increased problems in planning for and managing the collection.

Other conclusions indicated by the findings are the following:

1. HEGIS data can be used for making comparisons among sectors of higher education. In fact, many would argue that it is accurate enough, when handled appropriately, for making state-to-state and inter-institutional comparisons.

2. HEGIS is not being used as fully as it might be for policy analysis, planning and evaluation either by businesses or university scholars. As noted earlier, there is only a small coterie of scholars and students in universities that is using HEGIS for the above purposes. While there are strong indications that data are being used somewhat by businesses for planning recruitment and evaluating or negotiating affirmative action programs, these uses seem fairly unsophisticated. There is little information in the general literature on higher education about the contents of HEGIS and how to use it.

RECOMMENDATIONS

Several recommendations follow naturally from the above conclusions and are divided into two sections. The first group of recommendations, not necessarily in the order of priority, are those which should be addressed immediately by the National Center for Education Statistics. The second group, again not in order of importance, are those which NCES should investigate after the first group. The recommendations are organized in terms of objectives and each objective includes recommendations or succestions for achieving the objectives.

First Priority Recommendations

Improving timeliness of dissemination. As noted in the conclusions and indicated in findings from the literature as well as from surveys and interviews, the major complaint with HEGIS is the timeliness and form in which the data are reported after collection. For example, a survey of the literature indicated that frequency of use generally parallels the collection and reporting of data. Moreover, and somewhat contrary to earlier expectations, the publication and distribution of the data in hard copy, as well as on computer tapes, is necessary since many researchers and governmental staff need to refer to published material for quick information. At the same time, machine processable data is required for complex analyses and full reporting on the condition of higher education by sectors.

Therefore, it is recommended that NCES do what is necessary to obtain the timely support of other government agencies, in particular the Government Printing Office, to expedite the publication of reports in hard copy while improving the timeliness of access of machine processable data by tapes or EDSTAT terminals by speeding up editing, data processing, and reproduction cycles. It is recognized that improving timeliness to meet a target release of six months to no later than a year after data collection may require publication of data prior to the receipt of reports from certain institutions or states. Their absence and the reasons for such absences should be noted in the reports. At the same time, it would probably be useful to continue to input or estimate data for the missing institutions, so noting.

Insuring completeness and continuity of the data base. While a major priority must be given to early reporting of HEGIS data, even if this means publishing prior to receipt of reports from all institutions, provision should be made for including data from the tardy institutions as they are received both in hard copy publications as well as the machine processable data files. Thus provision should be made to issue addenda in a timely fashion and revise the master data files. These addenda should be published and the files should be revised in a timely and probably incremental manner.

Dissemination of data. NCES should give increased attention to improving the dissemination of HEGIS data. As noted in the review of the literature, there is little information in the general literature of higher education about "how to use" and the availability of HEGIS data. Users of the data generally find out about its availability from NCES publications or from prior users. Several methods of improving dissemination should be considered by NCES:

1. Presidents of institutions and those in the institutions who are charged with the collection and compilation of HEGIS surveys for their institutions should be provided special reports that show how an institution compares with its peers or its region.

2. Not only presidents of institutions, but those who actually complete the surveys, should receive complimentary copies of the HEGIS reports or, at the minimum, abstracts of such reports.

3. It should be helpful if known students of higher education received either abstracts or copies of HEGIS reports.

4. The feasibility of NCES to license or otherwise support certain private or non-profit agencies in distributing HEGIS data files and/or providing special reports from HEGIS data files should be investigated. Certain contractors and non-profit institutions are currently acting as retailers of HEGIS data by performing special edits and/or reports for one or more institutions. However, the availability of these services does not appear to be

widely known. NCES is now supporting several efforts, sometimes in conjunction with other agencies such as the National Science Foundation, to upgrade the quality of HEGIS files, particularly in historical files on finance and enrollment. These efforts should be catalogued and the availability of these files should be widely disseminated so that other users could obtain access to the upgraded files, either through NCES or the agencies, at a reasonable cost.

5. The current practice of NCES in releasing the results of HEGIS surveys in bulletins and press releases should be extended.

Increasing contract support to encourage small users of the data. The findings suggest that the major impediments to the uses of HEGIS data are lack of timely release, lack of knowledge about the availability of the data except among a small coterie of users, and "start-up" costs for a new user of HEGIS computer tape files. Several recommendations have been made above for improving the timeliness of reports and the dissemination of reports.

However, there is still the problem of encouraging the use of the data for research and reporting on the condition of higher education. The quality of the data in terms of timely reports by institutions, accuracy, and completeness (as well as complaints about its current quality) can be expected to increase with use of the data. Thus the richness, accuracy and completeness of the resource for analyzing the condition of higher education to support useful and insightful policy and law would grow through use. For example, the value of the data has already been enhanced by NCES and foundation-supported studies that have highlighted the plight of certain sectors of higher education in terms of enrollment projections and financial resources. Other researchers have been encouraged to use the data to describe the status of disadvantaged or new clientele in higher education; for example, blacks, hispanics, and women. However, such contracts and grants have not generally provided support to a large body of researchers.

Therefore, it is recommended that more support be provided to students of higher education for using HEGIS data to examine conditions generally outside the primary interest of education associations. One model worth examining is the small grants program of the National Science Foundation, which supports research using NSF data files to study higher education programs in science.

At the same time, NCES should attempt to obtain additional staff support for more in-house analysis of HEGIS data and using such data in conjunction with other files. It should continue to support effects as research to improve the utility of finance data.

Collecting financial aid data. Reports of previous studies for improving HEGIS data as well as the findings of this study indicate that NCES should give high priority to collecting and/or disseminating more data for evaluating the impact of financial aid programs and for developing policy in this area.

There are complex problems in defining what data are necessary and how data should be collected regarding the impact of financial aid programs on the resources of institutions, and on equality of opportunity and choice for students. Much of the data may already be available in other offices of the Department of Education and in the Office of Civil Rights.

Prior to implementing a new collection effort, NCES should determine what data are available in these offices and what is necessary to include in HEGIS where it could be easily accessed for analyses. However, it is likely that all of the necessary data are not yet being collected by either government or private agencies. It may be necessary to collect data from students who do not receive financial aid as well as from those who do. In such a case, it would probably be useful to take statistical samples of the student body. This will represent a new practice for HEGIS and the institutions who compile HEGIS data since they now compile data through the institution from the universe of such populations as students, faculty, dollars and space.

Continuation of universe and annual surveys. One of the problems of this study was to determine whether universe data should be collected and how often surveys should be made. All but three (facilities, libraries, and total employees) are made yearly. Both users and compilers of data for the surveys agreed that universe data was required because of the diversity of institutions, and that regular surveys were necessary. Management of the data collection process is facilitated (and thus the burden is eased) when compilers can plan for the data collection on a regular basis. It appears that data that is collected annually is required on a yearly basis and that the collection and publication of library and facility data should be done with more regularity and perhaps more often.

Therefore, it is recommended that: 1) universe data continue to be collected; 2) that the data now collected annually continue to be collected yearly; and 3) that the collection and dissemination of facility and library data be scheduled regularly.

Collection of facility data. It has been several years since facility data have been collected by HEGIS from the institutions. During this period there have been many predictions that higher education has excess capacity both in facilities and faculty for projected enrollments. Given these predictions, it may be that investment in facilities has declined while facilities have aged, equipment has been made obsolete by newer technology, and needs have changed because of enrollment shifts by region, school, discipline, and other factors. But whether the above is true is not known since there has not been a recent survey of facilities.

Therefore, it is recommended that NCES conduct a facility survey in 1981 as planned. At the same time, NCES should begin a study to determine whether and how the current survey instrument should be revised for follow-on surveys to determine more fully the effects of deferred maintenance, technological obsolescence, and shifting needs on facilities. Unfortunately, most institutions of higher education, unlike private businesses, do not provide or account for depreciation and technological obsolescence. Thus, the design of an appropriate survey instrument will require considerable thought if the instrument is to collect data that will adequately describe the condition of higher education facilities in relationship to needs.

Second Priority Recommendations

Increasing the scope of the surveys. The literature, interviews, and conference reports on the utility of HEGIS data, suggest that HEGIS should collect additional information for reporting on the condition of higher education. It has already been recommended that NCES provide leadership in compiling and disseminating data collected by Department of Education program offices and the Office of Civil Rights that is already being collected, particularly on the source and distribution of financial aid funds. Other additions or extensions of the surveys that should be considered are the following:

1. Faculty Salary Data. In addition, there appears to be a need for more detailed information on faculty salaries, at least at the institutional level. Several institutional planners reported that faculty salary data by discipline are used for making resource allocation and personnel decisions. However, members of the Technical Advisory Panel questioned whether the data were needed for reporting on conditions at the national level. There was also some fear that the collection of such data would be difficult and might further delay the reporting of salary data.

However, institutions do make faculty decisions by discipline and it can be projected that a good analysis of the status of women and minorities in higher education would require faculty salary data by discipline. It is probable that data by discipline is required only at fairly high levels of aggregation--for example, hard sciences, social sciences, and such professional schools as business administration, education, medicine, law, and engineering.

Since there are differences of opinion on how badly the data are needed and at what levels they should be collected, it is recommended that NCES conduct a special study of the need for these data and the impact that such a collection would have on improving the timely release of data that is now being collected.

2. Employee Data. The data currently being collected on employees in higher education, for other than full-time faculty, are relatively limited. For example, current surveys do not provide very much useful

information on part-time faculty, graduate research and teaching assistants, research associates, and post-doctoral candidates involved in teaching and research. There are indications that the former mix of full-time faculty to other types of personnel for teaching and research is shifting. As increased amounts of data on personnel could provide information on whether there are significant shifts in the mix of personnel and higher employment opportunities for manpower planning. Therefore, it is recommended that NCES consider the feasibility of collecting additional data on employees.

3. Output and Quality. The review of the literature and interviews indicated that there is a growing demand for more information about the outputs and quality of higher education, and student characteristics. Certain associations and scholars, regularly or (more often) irregularly, collect data on output, quality, and student characteristics. Perhaps most notable among these reports are Dr. Astin's yearly study of freshmen entering class (CIRP)*, the NCES National Longitudinal Survey of the 1972 high school graduation class, and various profit and non-profit directories of higher education institutions. The latter often provide some data on student characteristics--in particular, admission requirements in terms of grades and test scores.

Although there are increasing concerns for measuring and reporting the quality and outputs of higher education and/or for particular institutions, there is wide divergence on what outputs and quality are and how they can be measured. Despite these problems of measurement there is increasing anxiety about a perceived decline in quality, the potential effects of competition for students on quality, and the lack of consumer information to aid students and their parents in selecting institutions. There also seems to be growing dissatisfaction with use of student credit hours or other enrollment measures as the major measure for allocating resources.

Therefore, it is recommended that NCES support studies to determine whether the demand for the above data would justify the burden on institutions and/or government agencies that collection of such data would impose. Support should also be provided for research and development on measures of quality and output. It is also recommended that NCES should determine what is currently being done and reported by scholars and associations, and how it might best support these efforts and act as a broker in disseminating the data widely for research and reporting on the condition of higher education.

Recommendations of the Technical Advisory Panel

In its review of the preliminary draft of the final report, the Technical Advisory Panel noted that the report provided documentation that supported their perceptions that HEGIS was a necessary and increasingly used data base for reporting and analyzing the condition of higher education. It strongly supported recommendations for improving timely reporting and the means that were suggested for encouraging the uses of HEGIS data.

---

*Cooperative Institutional Research Program.

It is recommended that the report be widely disseminated and that NCES and the higher education community support efforts to get the recommendations implemented at the earliest possible date.

It was also recommended that NCES commission a study to determine: (1) the relative investment in collecting statistics on education, (2) the efficiency or effectiveness of current collection and dissemination efforts, and (3) what might be done to improve effectiveness.

SELECTED REFERENCES* AND BIBLIOGRAPHY

" A "

AAUP Bulletin

*Nearly keeping up: Report on the economic status of the profession. Committee on Compensation, 1975-76, 1976, 195-206.

Academic freedom and tenure: Southern Illinois University at Carbondale. 1973, *59*(1), 63-72.

An era of continuing decline: Annual report on the economic status of the profession, 1978-79. M. Fymoneie, author, September 1979, *65*, 319-367.

Forum: Not nearly keeping up: Commentary on trends in real faculty compensation in the U.S. 1978, *64*(2), 86-88.

Hard times: Report on the economic status of the profession. 1974, *3*, 171-243.

Report One of the Commission on the Status of Women. 1970.

No progress this year: Report on the economic status of the profession, 1976-77. M. Eymoneie, Survey Director, August 1977, *63*(3), 146-228.

*Two steps backward: Report on the economic status of the profession, 1974-75. Committee Z. 1975, *61*(2).

Academic Media. *Standard education almanac*. Washington: Marquis Academic Media, 1977-78.

Adams, J. Planning: The ultimate methods of controlling costs. *Community and Junior College Journal*, 1973, *43*(7), 20-21.

Adams, K. A. *Implementation of systems of educational development for undergraduate pharmacy education*. Ohio: Ohio State University, College of Pharmacy, July 1975.

Adams, S. & Barker, N. *1975 affirmative action recruitment directory: Human resources in higher education*. Boulder, CO: WICHE, February 1975. Study was sponsored by WICHE.

Adams, V. A. The cost of higher education. *College Management*, 1972, *7*(1), 10-15.

Adkins, D. L. *The great American degree machine: An economic analysis of the human resource output of higher education*. Berkeley, CA: The Carnegie Foundation for the Advancement of Teaching, 1975.

Aiken, R. Tort liability of governing. *Journal of College and University Law*, 1974-75, *2*(2), 129.

Alaska State Department of Education. *Annual report for 71-72 of student loan program as accepted by the student loan committee on July 1972*. Alaska: Alaska State Department of Education, July 1972.

Albany Regional Medical Program. *Albany regional medical program: Health manpower* (Vol. 2). Albany, NY: Albany Regional Medical Program, 1970.

Alford, H. *The impact of special admissions programs on general admissions policies in five San Francisco Bay area public institutions of higher education 1966-1971, Stanford University, CA*. Washington, DC: Bureau of Educational Research and Development, July 1972.

Alfred, Richard L. & Good, Mary F. *The status of women in higher education and the professions*. Kansas City, MO: Metropolitan Junior College District, 1972.

Allen, Richard H. *HEGIS financial reporting guide: 1980 edition*. Boulder, CO: NCHEMS, 1980.

Allen, Richard H., & Collier, Douglas J. *Higher education finance manual: The source/use concept* (Vol. 3). Boulder, CO: NCHEMS, 1980.

Allman, K. A. *A reference guide to postsecondary education data sources*. Boulder, CO: NCHEMS at WICHE, 1975.

Alternative architecture. *College and University Business*, 1973, *54*(1), 27-34.

American Alliance. AAHE institute offering . . . health education. *Health Education*, 1978, *9*(6), 35-43.

*American Association of Community and Junior Colleges. *1976 community junior and technical college directory*. Washington, DC: American Association of Community and Junior Colleges, 1976.

American Association of Community and Junior Colleges. Women in occupational education. *Community and Junior College*, 1977, *47*(7), 28-30.

American Association of State Colleges and Universities. *Public aid to private and proprietary institutions*. Washington, DC: AASCU, 1976.

American Association of State Colleges and Universities. *Academic freedom and responsibility and academic tenure*. Washington, DC: AASCU, 1972.

American Association of State Colleges and Universities. *Commitment, continuity, change: Proceedings, 18th Annual Meeting of Colleges and Universities*. S. K. Ralson, author. Washington, DC: AASCU, November 1978.

American Association of State Colleges and Universities. *The regional state colleges and universities in the middle 1970's*. F. F. Harcleroad, author. Washington, DC: AASCU, 1976-77.

American Association of State Colleges and Universities. *The value of a college education*. Washington, DC: AASCU, 1976.

American Association of State Colleges and Universities. *Less-than-baccalaureate level technical education programs in four year public colleges and universities*. Washington, DC: AASCU, 1976.

American Association of State Colleges and Universities. *Changes in enrollment by 1985*. C. Henderson, author. Washington, DC: AASCU, 1977.

American Association of State Colleges and Universities. *Planning for financial exigency in state colleges and universities.* W. M. Fulkerson, author. Washington, DC: AASCU, 1974.

American Association of State Colleges and Universities. *Entering the third century: An agenda for public higher education, Proceedings of the 16th Annual Meeting of AASCU*. Washington, DC: AASCU, 1977.

American Association of State Colleges and Universities. *Annual tuition and fee, room and board charges among AASCU member institutions*. Washington, DC: AASCU, 1979.

*American Council on Education. *Accredited institutions of postsecondary education and other programs*. Annual. Washington, DC: ACE, Council on Postsecondary Accreditation, 1976/77.

American Council on Education. *Guide to the evaluation of educational experiences in the armed services: The 1978 guide*. Includes 1976, 1977, 1979 editions. Washington, DC: ACE.

American Council on Education. *Universal higher education: Costs, benefits, and options*. L. Wilson & O. Mills, authors. Washington, EC: ACE, 1972.

American Council on Education. *Women in higher education*. W. T. Furniss & P. A. Graham, authors. Washington, DC: ACE, 1974 and 1975.

American Council on Education. *Collective bargaining comes to the campus*. R. K. Carr & D. K. Van Eyck, authors. Washington, DC: ACE, 1973.

American Council on Education. *Policy Analysis Service Reports: Changes in enrollment by 1985*. C. Henderson, author. June 1977, *3*(1).

American Council on Education. Changes in graduate programs in science and engineering, 1970-72 and 1972-74. *Higher Education Panel Report No. 4*. B. A. Blandford, author. Support from the National Science Foundation, Division of Science Resources Studies. Washington, DC: ACE, 1972.

American Council on Education. Enrollment of junior-year students (1970-71). *Higher Education Panel Report No. 5*. B. A. Blandford & C. L. Sell, authors. Support from the National Science Foundation, Division of Science Resources Studies. Washington, DC: ACE, 1972.

American Council on Education. Expected first-year graduate enrollment in science and engineering, Fall 1972. *Higher Education Panel Report No. 10*. B. A. Blandford & J. C. Trexler, authors. Support from the National Science Foundation, Division of Science Resources Studies. Washington, DC: ACE, 1972.

American Council on Education. *The American freshman: National norms for Fall 1972*. American Council on Education Research Reports, *December 1972*, *7*(5). Support from the National Science Foundation, Division of Science Resources Studies. Washington, DC: ACE, 1972.

American Council on Education. Enrollment of junior-year students (1971-72). *Higher Education Panel Report No. 12*. J. E. Dutton & B. A. Blandford, authors. Support from the National Science Foundation, Division of Science Resources Studies. Washington, DC: ACE, Spring 1973.

American Council on Education. Survey of first-year graduate and postdoctoral enrollment in science and engineering. *Higher Education Panel Report No. 1*. Washington, DC: ACE, August 1971.

American Council on Education. Research support for science faculty. B. A. Blandford & D. Dutton, authors. *Higher Education Panel Report No. 2*. Washington, DC: ACE, November 1971.

American Council on Education. Faculty tenure and contract systems: 1972-1974. *Higher Education Panel Report No. 22*. E. H. El-Khawas & W. T. Furniss, authors. Washington, DC: ACE, 1974.

American Council on Education. College dropouts: A national profile. *American Council on Education Research Reports*, 1972, *7*(1)

American Council on Education. *Accredited institutions of higher education*. Washington, DC: U.S. Government Printing Office, 1965.

American Council on Education. *Fact book on higher education*. Washington, DC: ACE, 1977.

American Council on Education. *Financial measures project: Measuring financial conditions of colleges and universities, 1978 Working Conference*. Washington, DC: ACE, Economics and Finance Unit, 1979.

*American Council on Education. *Financial measures project: New developments in measuring financial conditions of colleges and universities: Papers presented at working conference (1977)*. Washington, DC: ACE, Economics and Finance Unit, 1979.

American Council on Education. Financing part-time students: The new majority in postsecondary education. Washington, DC: ACE, Committee on the Financing of Higher Education for Adult Students, 1974.

American Council on Education. Recent research on private higher education: A compilation. Policy Analysis Service Reports. Washington, DC: ACE, 1976, 2(2).

American Council on Education. Recent research on private higher education: A compilation. T. Hartle, author. Washington, DC: ACE, 1976.

American Council on Education. A comparison of minority aspirants to health careers. Washington, DC: ACE, 1977.

American Council on Education. Public and private higher education: Differences in role director and clientele. E. H. El-Khawas, author. Washington, DC: ACE, 1976. Study sponsored by the American Council on Education.

American Council on Education. Higher education finance: Health and distress in formulating policy in postsecondary education: The search for alternatives. H. H. Jenny, author; J. F. Hughes, & O. Mills, Eds. Washington, DC: ACE, 1975.

American Council on Education. A study of cost analysis in higher education: The future and use of cost analysis in higher education. Vol. 4. C. Adams, G. Kingston, & R. G. Schroeder, authors. Washington, DC: ACE, 1978.

American Council on Education. Planning techniques for university management. J. A. Casasco, author. Washington, DC: ACE, 1970.

American Council on Education. A study of cost analysis in higher education: The production and use of cost analysis in institutions of higher education. Vol. 2. C. Adams, R. Hankins, G. Kingston, & R. Schroeder, authors. Washington, DC: ACE, 1978.

American Council on Education. Expected enrollment for masters of higher degrees, Fall 1973. J. E. Dutton, author. Higher Education Panel Report No. 17. Washington, DC: ACE, March 1974. Support from NSF, Division of Science Resources Studies.

American Council on Education. Courses and enrollment in ethnic/racial studies. Higher Education Panel Report No. 14. Washington, DC: ACE, August 1973. Support from NSF, Division of Science Resources Studies.

American Council on Education. Enrollment of minority graduate students at Ph.D. granting institutions. E. H. El-Khawas, & J. L. Kinzer, authors. Higher Education Panel Report No. 19. Washington, DC: ACE, August 1974. Support from NSF, Division of Science Resources Studies.

American Council on Education. Expectations of space and maintenance needs for Fall 1974. E. H. El-Khawas, author. Higher Education Panel Report No. 20. Washington, DC: ACE, September 1974. Support from the NSF, Division of Science Resources Studies.

American Council on Education. Health research facilities: A survey of doctorate granting institutions. F. J. Atelsek, & I. L. Gomberg, authors. Higher Education Panel Report, Survey No. 28. Washington, DC: ACE, 1976. Support from NSF, Division of Science Resources Studies.

American Council on Education. New full-time faculty 1976-77: Hiring patterns by field and educational attainment. F. J. Atelsek, & I. L. Gomberg, authors. Higher Education Panel Report No. 38. Washington, DC: ACE, March 1978. Support from NSF, Division of Science Resources Studies.

American Council on Education. Production of doctorates in selected fields, 1972-1975. J. E. Dutton, & E. H. El-Khawas, authors. Higher Education Panel Report No. 16. Washington, DC: ACE, April 1974. Support from NSF, Division of Science Resources Studies.

American Council on Education. Programs of recruitment, admittance, and retention in graduate and professional schools. Higher Education Panel Report No. 41. Washington, DC: ACE, December 1978. Support from NSF, Division of Science Resources Studies.

American Council on Education. Young doctorate faculty in selected science and engineering departments, 1975 to 1980. F. J. Atelsek, & I. L. Gomberg, authors. Higher Education Panel Reports, Survey No. 30. Washington, DC: ACE, August 1976. Support from NSF, Division of Science Resources Studies.

An analysis of the utility of HEGIS finance data in conducting institutional and higher education sector comparisons. Proceedings of the Joint Study Group on the Utility of HEGIS Finance Data, May 22-23, 1980, Washington, DC. Study group organized by James A. Hyatt and Nathan Dickmeyer. Sponsored by National Association of College and University Business Officers, American Council on Education, and National Center for Education Statistics.

Andersen, C. (Ed.). A fact book on higher education, earned degrees (4th Issue). Washington, DC: ACE, 1975.

Anderson, B. R. Making the most of a food service operation. College Management, 1973, 8(3), 18-19; 24.

Anderson, C. A., Bowman, M. J., & Tinto, V. Where colleges are and who attends. New York: McGraw-Hill Book Co., 1972. Study was sponsored by Carnegie Foundation.

Anderson, C. J., & Lanier, L. H. A study of the financial condition of colleges and universities: 1972-1975. Washington, DC: ACE, 1975.

Anderson, R. E. Strategic policy changes at private colleges: Educational and fiscal implications. New York: Columbia University, Teachers College Press, 1977.

*Andrew, L. D., & Friedman, B. D. *Final report: A study of the causes for the demise of certain small, private, liberal arts colleges in the United States*. Blacksburg, VA: Virginia Polytechnic Institute and State University, 1976. Study sponsored by U.S. Office of Education.

Andrew, L. *Faculty tenure and activity in Virginia*. Richmond, VA: State Council of Higher Education for Virginia, November 1976.

Angell, G. W. *Management prerogatives and faculty rights, Special Reports #29*. Washington, DC: Academic Collective Bargaining Information Service, 1972, 1-12.

Annas, T., & Iverson, S. *Attrition and retention . . . bachelor degree programs*. New York: SUNY at Albany, Center Staff Office Institute Research, May 1976.

Annual report of the U.S. Commission of Education, 1974. Washington, DC: Commission of Education, 1975.

Arkansas State Department of Higher Education. *Biennial report*. Arkansas: State Department of Higher Education, October 1973.

Ashby, E. *Adapting universities to a technological society*. San Francisco: Jossey-Bass, 1974.

Ashby, E. *Any person, any study.* New York: McGraw-Hill Book Co., 1971. Study was sponsored by Carnegie Commission on Higher Education.

Ashworth, K. H. *American higher education in decline*. College Station: Texas A & M University Press, 1979.

Ashworth, K. H. *Coordinating board: Texas college and university system*. College Station: Texas A & M University, August 1977.

Ashworth, K. H. The pauper and the prince. *Liberal Education*, 1973, *59*(2), 133-140.

Askew, T. A. *The small college--a bibliographic handbook*. Washington, DC: CASC, 1973.

Association of American Medical Colleges. *Report on medical school faculty salaries, 1974-75*. Washington, DC: Association of American Medical Colleges, 1975.

Association for Institutional Research. *Associate degrees and other formal awards below the baccalaureate*. G. S. Malitz, author. Tallahassee, Florida: Florida State University, 1978. Prepared for National Center for Education Statistics.

Association of Physical Plant Administrators of Universities and Colleges. Comparative costs and staffing report: Physical plants of colleges and universities. Washington, DC: APPAUC, 1978 ed.

Association of Physical Plant Administrators of Universities and Colleges. Remodeling, renovation, and conversion of educational facilities: A compilation of selected papers from those presented at a series of workshops on this topic. Washington, DC: APPAUC, 1975.

Association of Physical Plant Administrators of Universities and Colleges. Steps toward campus accessibility. Washington, DC: APPAUC, 1979.

Association of Research Libraries. Changing environment for research library development. Washington, DC: Minutes of the 92nd Meeting, ARL, 1978.

*Astin, A. W. Four critical years. San Francisco: Jossey-Bass, 1977.

Astin, A. W., King, M. R., Light, J. M., & Richardson, G. T. American freshmen: National norms--Fall '73-74. Washington, DC: American Council on Education, 1975.

Astin, A. W. College dropouts: A national profile. American Council on Education, Research Reports, 1972, 7(1).

Astin, A. W., Lee, C., & Besse, R. M. The invisible colleges: A profile of small private colleges with limited resources. New York: McGraw-Hill Book Co., 1972. Study was sponsored by the Carnegie Commission on Higher Education.

Astin, A. W. An empirical characterization of higher education institutions. In K. A. Feldman (Ed.). Colleges and Students. New York: Pergamon, 1972, 149-164.

Astin, H. S., & Cross, P. H. Characteristics of entering black freshmen in predominantly black and predominantly white institutions: A normative report. California: Higher Education Research Institute, 1977.

Atelsek, F. J., & Gomberg, I. L. Estimated number of student aid recipients, 1976-77. Washington, DC: American Council on Education, Higher Education Panel, September 1977.

*Augenblick, J., Lupton, A. H., & Heyison, J. The financial state of higher education. Change, September 1976, 8(8), 21-26, 28-35.

" B "

Bacon, P. A. Educational purchasing agent: In the middle in many ways. *College and University Business*, 1974, *56*(5), 22-25.

Bakshis, Robert, & Godshalk, James. *Sex bias in traditionally male occupational programs*. Illinois: College of DuPage, 1978, 1-43.

Barber, Nancy. *Directory of higher education innovation*. Boulder, CO: WICHE, April 1975. Sponsored by WICHE.

Barksdale, Milton Kendall. *Graduate and professional school admissions*. Kentucky: Eastern Kentucky University, April 1977, 1-43.

Baughman, G. W. *A proposed price index for statewide budget models*. Memorandum. Columbus, OH: The Ohio State University and Ohio Board of Regents, May 1974.

Bayer, Alan E. Faculty composition, institute structure, and student's college environment. *Journal of Higher Education*, 1975, *46*(4-6), 549-563.

Beals, E. W. et al. *Study of Massachusetts two-year college students: Implications for Massachusetts four-year colleges and universities*. Massachusetts: University of Massachusetts, Central Office of State Colleges, August 1972.

Belitsky, A. Harvey. *Private vocational schools: Their emerging role in postsecondary education*. Washington, DC: The W. E. Upjohn Institute for Employment Research, 1970.

Ben-David, J. *Centers of Learning: Britain, France, Germany, and the United States*. New York: McGraw-Hill Book Co., May 1977.

Benezet, Louis T. *Private higher education and public funding*. Washington, DC: ERIC/Higher Education Research Report No. 5, The American Association for Higher Education, 1976. Study was sponsored by ERIC Clearinghouse on Higher Education.

Benezet, Louis T. Private higher education: What price diversity. *Educational Record*, 1977, *58*, 201-217.

Bennis, W. *The leaning ivory tower.* San Francisco: Jossey-Bass, 1973.

*Benson, Charles S., & Hodgkinson, Harold. *Implementing the learning society*. San Francisco: Jossey-Bass, 1974.

Berdahl, R. O. *Statewide coordination of higher education*. Washington, DC: American Council on Education, 1971.

*Berenyi, John. Capital financing by colleges and universities. Memorandum to Carol Van Alstyne. Washington, DC: ACE, October 9, 1975.

Bergquist, W. H., & Shoemaker, W. A. A comprehensive approach to institutional development. San Francisco: Jossey-Bass, 1976.

Bernhardt, Recis. Why collective bargaining? Research in Higher Education, 1977, 7(1), 79.

Bina, James V., Peterson, John C., & Halasz, Ida Marie. Databases and clearinghouses: Information resources for education. Information Series No. 130. Columbus, OH: The Resource and Referral Service, The Ohio State University, 1978.

Birnbaum, Robert. Unionization and faculty compensation. Educational Record, 1974, 55(1), 29-33.

Birnbaum, W. M. The more we change the worse we get. Social Policy, 1971, 2(1), 10-13.

Birnbaum, William M. New directions for community colleges--from class to mass learning. San Francisco: Jossey-Bass, 1974.

Birnbaum, W. M. From class to mass learning. San Francisco: Jossey-Bass, Autumn 1974.

Blake, E. Jr., Lambert, L. J., & Martin, J. L. Degrees granted and enrollment trends in historically black colleges: An eight year study. Washington, DC: Institute for Services to Education, 1974.

Blandford, B., & Dutton, D. Research support for science faculty. Washington, DC: American Council on Education, November 1971.

Blandford, B. A., & Trexler, J. C. Expected first-year graduate enrollment in science and engineering, Fall 1972. Higher Education Panel Report No. 10. Support from the National Science Foundation, Division of Science Resources Studies. Washington, DC: ACE, 1972.

Blandford, B. A., & Sell, C. L. Enrollment of junior-year students (1970-71). Higher Education Panel Report No. 5. Support from NSF, Division of Science Resources Studies. Washington, DC: ACE, 1972.

Blaze, Wayne, Hertzberg, Bill, Lehrke, Al, & Krantz, Roy. A guide to alternative colleges and universities. Boston: Beacon Press, 1974.

Bloom, Allan M. Conducting data exchange programs. Paper presented at the Annual Conference of the Southern Association for Institutional Research, Orlando, Florida, October 25-26, 1979.

Bloom, Allan M. The value of IEP in internal academic administration. Paper presented at the Virginia AIR Conference, Norfolk, Virginia, April 1979.

Blumer, Dennis H. (Ed.). *Legal issues for postsecondary education: Briefing papers I*. Washington, DC: American Association of Community and Junior Colleges in Cooperation with the National Association of College and University Business Officers and the Association of College and University Attorneys, 1975.

Bogue, E. G. *Strategies for action: An outline of factors which influence decision on program plans*. ERIC Document Reproduction Service, ED 049 482, April 1971, 1-27.

Bolin, J. L. Cum Laude? So what! *College and University*, 1975, *59*(3), 213; 224.

Bonham, George W. Will government patronage kill the universities? *Change*, 1975-76, *7*(10), 10-13; 60-61.

Bordelon, M. et al. *Faculty load: A report to dean of instruction.* Texas: College of Mainland, May 1975.

Boulding, K. Publicly supported universities--available education. *Phi Delta Kappan*, 1976, *58*(1), 36.

Boulding, K. Quality vs. equality. *Daedalus*, 1975, *104*(1), 298.

Bounds, S. M. *Assessment of student attitudes*. Hampton, VA: Thomas Nelson Community College, June 1977.

*Bowen, H. R., & Minter, W. J. *Private higher education, first annual report on financial and educational trends in the private sector of American higher education*. Washington, DC: Association of American Colleges, November 1975.

Bowen, Howard R., & Douglass, Gordon K. *Efficiency in liberal education*. New York: McGraw-Hill, 1971. Study was sponsored by the Carnegie Commission on Higher Education.

*Bowen, Howard R. *Evaluating institutions for accountability, new directions for institutional research*. San Francisco: Jossey-Bass, Inc., Pub. No. 1, 1974. Study was sponsored by Association for Institutional Research.

Bowen, H., & Bailey, S. The effective use of resources: Financial and human. Presented at the 1974 National Conference on Trusteeship, Association of Governing Boards of Universities and Colleges, Washington, DC, April 30, 1974.

Bowen, H. R. Higher education: A growth industry? *Educational Record*, 1974, *55*(3), 147-158.

Bowen, W. G. *The economics of the major private universities*. Berkeley, CA: Carnegie Commission, 1968.

Bowen, W. G. *Economic aspects of education: Three essays*. Princeton, NJ: Princeton University, 1964.

Bowen, W. G. The effects of inflation/recession on higher education. *Educational Record*, 1975, *56*(3).

Bowen, William G. Higher education and the national economy. *Planning for Higher Education*, 1975.

Bowles, Frank, DeCosta, F. A., & Tollett, K. S. *Between two worlds: A profile of negro higher education*. New York: McGraw-Hill, 1971. Study sponsored by the Carnegie Commission on Higher Education.

Boyd, William B. The impact of college bargaining on university government. *AGB Reports*, November 1973, 26-31.

Brady, Ronald W., Chaney, John F., Baughman, George W., & Wallhaus, Robert A. *Administration data processing: The case for executive management development*. Boulder, CO: NCHEMS at WICHE, 1975.

Brandt, Norman J., & Ni, Anne. *Financial statistics of institutions of higher education, fiscal year 1977*. Washington, DC: Government Printing Office, 1978 (NCES 79-300). Study sponsored by NCES.

Brawer, Florence B. *Three colleges: Three faculties.* California: UCLA, June 1974.

Brawer, F. B. *Who teaches history in the two-year college?* California: UCLA, February 1976.

Brenerman, D. W. *Graduate school adjustments to the new depression in higher education*. Washington, DC: National Board on Graduate Education, 1975.

Brown, G. H., Rosen, N. L., & Hill, S. T. (from the National Center for Education Statistics) and Olivas, M. A. (from LULAC National Educational Service Centers, Inc.). *The condition of education for Hispanic Americans*. Washington, DC: National Center for Education Statistics.

Brown, James W. (Ed.). *Educational media yearbook 1977*. New York: R. R. Bowker Co., 1977.

*Brubaker, Paul. *Technical report No. 13, financial health indicators for institutions of higher learning*. Palo Alto, CA: American Institutes for Research for the National Center for Education Statistics, November 1979.

Brue, Eldon J. et al. *How do community college transfers and occupational students differ?* Iowa City, IA: American College Testing Program, February 1971.

Bruess, Clint E. Trends in professional preparation of health educators. Health Education, 1979, 9(2), 28-29.

Bruess, Clint E., & Gay, John E. Professional preparation of the health educator. A report of a forum sponsored by the ASNA committee on college health education and professional preparation. Journal of School Health, 1976, 46(4), 222-225.

Bryant, James W. A survey of black American doctorates. New York: Ford Foundation, 1970. 11 pp.

Bucklew, N. S. State Colleges: Central Michigan faculty unions and collective bargaining. San Francisco: Jossey-Bass, Inc., 1973.

Burkhead, Marie. Underrepresentation of women in university-sponsored management development programs. Journal of Business Education, 1972, 48(3), 109-110.

Butz, W. P., & Jordon, P. Population growth and resource requirements for U.S. education. ERIC Document Reproduction Service, ED 074 583, 1973.

Byers, Maureen, & Bower, Cathleen. IEP analysis and use: Single-institution data. Tech. Report 73. Boulder, CO: WICHE, June 1975. Study was sponsored by WICHE.

" C "

Cain, Glen; Freeman, Richard; & Hanson, Lee (Eds.). *Labor market analysis of engineers and technical workers*. Baltimore: The Johns Hopkins Press, 1973.

California Postsecondary Education Commission. *Final annual report on faculty salaries and cost of fringe benefits at the University of California and the California State University and Colleges, 1978-79*. Sacramento, CA: California Postsecondary Education Commission, 1978.

California Postsecondary Education Commission. *Postsecondary education in California: Information digest 1978.* Sacramento, CA: California Postsecondary Education Commission, 1978.

California Postsecondary Education Commission. *State policy toward independent postsecondary institutions*. Sacramento, CA: California Postsecondary Education Commission, June, 1978.

Callan, P. M. et al. *Montgomery Postsecondary education today*. Montgomery Commission of Postsecondary Education, January 1974.

Cammack, Elwin F. Long range planning. In *Institutional research in the university: A handbook.* San Francisco: Jossey-Bass, 1971, 251-272.

Cammack, Elwin F. The utility of HEGIS finance data: A university system perspective. Issue paper for the Joint Study Group on the Utility of HEGIS Finance Data for Institutional and Higher Education Sector Comparisons. Washington, DC : National Association of College and University Business Officers, National Council on Education, and National Center for Education Statistics, May 1980.

Carbine, Michael. The degree dilemma. *Manpower*, 1974, *6*(11), 2-8.

Carine, Edwin. A memorandum: To the director of admissions to the dean. *Community College and Junior College Journal*, 1977, *48*(2),

*Carlson, Daryl E.; Farmer, James; & Weathersby, George B. *A framework for analyzing postsecondary education financing policies*. (Staff Report) Washington, DC: The National Commission on the Financing of Postsecondary Education, May 1974. Study was sponsored by the National Commission on the Financing of Postsecondary Education.

Carnahan, Orville. Need for planned change. *Community Junior College Journal*, 1975, *46*(1), 11-12.

Carnegie Commission on Higher Education. *Priorities for action: Final report of the Carnegie Commission on Higher Education*. New York: McGraw-Hill, 1973.

Carnegie Commission on Higher Education. *A chance to learn: An action agenda for equal opportunity in higher education*. New York: McGraw-Hill, March 1970.

*Carnegie Commission on Higher Education. *A classification of institutions of higher education*. New York: McGraw-Hill, 1973.

Carnegie Commission on Higher Education. *A digest of reports of the Carnegie Commission on Higher Education*. New York: McGraw-Hill, May 1974.

Carnegie Commission on Higher Education. *College graduates and jobs: Adjusting to a new labor market situation*. New York: McGraw-Hill, 1973.

*Carnegie Commission on Higher Education. *Governance of higher education: Six priority problems*. Cited in the literature review as an example of a topic that could but did not use HEGIS data. New York: McGraw-Hill Book Co., April 1973.

Carnegie Commission on Higher Education. *Higher education and the national health: Policies for medical and dental education*. New York: McGraw-Hill, 1970.

Carnegie Commission on Higher Education. *Higher education: Who pays? Who benefits? Who should pay?* New York: McGraw-Hill Book Co., 1973.

Carnegie Commission on Higher Education. *Institutional aid: Federal support to colleges and universities*. New York: McGraw-Hill Book Co., 1972.

Carnegie Commission on Higher Education. *Less time, more options: Education beyond the high school*. New York: McGraw-Hill Book Co., January 1971.

Carnegie Commission on Higher Education. *The more effective use of resources: An imperative for higher education*. A report and recommendations. Berkeley, CA: Carnegie Commission on Higher Education, 1972.

Carnegie Commission on Higher Education. *New students and new places*. New York: McGraw-Hill, 1971.

*Carnegie Commission on Higher Education. *The open door colleges: Policies for community colleges*. New York: McGraw-Hill, 1970.

Carnegie Commission on Higher Education. *Ph.D.'s and the academic labor market*. A. M. Cartter, author. New York: McGraw-Hill, 1976.

Carnegie Commission on Higher Education and the National Bureau of Economic Research. *Education, income and human behavior*. F. T. Juster, author. New York: McGraw-Hill Book Co., 1975.

Carnegie Commission on Higher Education. *The purposes and performance of higher education in the U.S.* New York: McGraw-Hill, 1973.

Carnegie Commission on Higher Education. *Quality and equality: Revised recommendations: New levels of responsibility for higher education*. New York: McGraw-Hill, 1970.

Carnegie Commission on Higher Education. *Reform on campus: Changing students, changing academic programs*. New York: McGraw-Hill, 1972.

Carnegie Commission on Higher Education. *Sponsored research of the Carnegie Commission on Higher Education*. New York: McGraw-Hill, 1975.

Carnegie Commission on Higher Education. *Tuition: A supplemental statement to the report of the Carnegie Commission on Higher Education*. New York: McGraw-Hill, 1974.

*Carnegie Council on Policy Studies in Higher Education. *A classification of institutions of higher education: Revised edition*. San Francisco: Jossey-Bass, 1978.

*Carnegie Council on Policy Studies in Higher Education. *The federal role in postsecondary education: Unfinished business (1975-80)*. San Francisco: Jossey-Bass, April 1975.

*Carnegie Council on Policy Studies in Higher Education. *Low or no tuition: The feasibility of a national policy for the first two years of college*. San Francisco: Jossey-Bass, 1975.

Carnegie Council on Policy Studies in Higher Education. *Next steps for the 1980's in student financial aid: A fourth alternative*. San Francisco: Jossey-Bass, March 1979.

Carnegie Council on Policy Studies in Higher Education. *The states and private higher education: Problems and policies in a new era*. San Francisco: Jossey-Bass, 1977.

Carnegie Foundation for the Advancement of Teaching. *The demise of diversity*. (Edited by Robert C. Pace). San Francisco: Jossey-Bass, 1974.

*Carnegie Foundation for the Advancement of Teaching. *More than survival: Prospects for higher education in a period of uncertainty.* San Francisco: Jossey-Bass, 1975.

Carnegie Foundation for the Advancement of Teaching. *The states and higher education: A proud past and a vital future*. San Francisco: Jossey-Bass, 1975.

Carnegie Foundation for the Advancement of Teaching. *Tuition . . . supplemental . . . who pays?* San Francisco: Jossey-Bass, 1974.

Carr, R. K., & Van Eyck, D. K. *Collective bargaining comes to the campus*. Washington, DC: American Council on Education, 1973.

Carroll, Maryanne. *An adaptation of financial analysis fo higher education*. Boulder, CO: NCHEMS, August 1973.

Carter, George. Part time staffing. *Journal of Physical Education and Recreation*, 1979, *50*(1), 49.

Cartter, Allan. Graduate education in a decade of radical change. *Research Reporter*, 1971, *6*(1), 5-6.

*Cartter, A. M. *Ph.D.'s and the academic labor market*. New York: McGraw-Hill Book Co., 1976. Study was sponsored by the Carnegie Commission on Higher Education.

*Cartter, A. M. *Assuring academic progress without growth: New Directions for Institutional Research*. San Francisco: Jossey-Bass, No. 6, 1975. Study was sponsored by the Association for Institutional Research.

Casasco, Juan A. *Planning techniques for university management.* Washington, DC: American Council on Education, 1970.

Cass, James, & Birnbaum, M. *Comparative guide to American colleges*. New York: Harper & Row (6th ed.), 1973.

Cavanaugh, William J. *Student expense budgets of colleges and universities for the 1971-72 academic year*. Princeton, NJ: Educational Testing Service, March 1971. 137 pp.

A Century of Doctorates. Washington, DC: National Academy of Sciences, National Research Council, 1978. 194 pp.

Central Staff Office of Institute Research. *Trends in credit course enrollment*. New York: State University of New York, July 1973.

Ceyne, John, & Bibert, Tom. This way out. New York: Dutton & Co., Inc. 1972.

Chambers, M. M. Appropriations of state tax funds for operating expenses of higher education. Washington, DC: NASULGC. 1968-69 through 1976-77.

Chambers, M. M. The jet set in state support of higher education. Journal of Higher Education, 1970, 41, 213-220.

Chapman, Randall G. Pricing policy and the college choice process. Research in Higher Education, 1979, 10(1), 37-57.

Cheit, Earl F. The management systems challenge: How to be academic through education and the state. Washington, DC: American Council on Education, 1975, 147-173.

*Cheit, Earl F. The new depression in higher education. New York: McGraw-Hill Book Co., 1971. Study was sponsored by the Carnegie Commission on Higher Education and the Ford Foundation.

Cheit, Earl F. The new depression in higher education--two years later. Berkeley, CA: Carnegie Commission on Higher Education, 1973.

Cheit, Earl F. What price accountability? Change, 1975, 7(9), 30-34; 60.

Chickering, A. W. Education and identity. San Francisco: Jossey-Bass, 1969.

*Chronicle of Higher Education--Representative Samples.

Are the days dwindling down for college summer sessions? 15(2) (September 12, 1977). (Robert L. Jacobson)

Average salaries of administrators. 15(I) (September 6, 1977).

College enrollment rate. 19(13) (November 26, 1979).

College enrollments reach 11.4 million; up 3.3 percent in a year. 15 (December 19, 1977). (Jack Magarrell)

College finances are looking better. (February 17, 1976)

Colleges 1978-79 cost increases fell below general rate of inflation. 19(4) (September 24, 1979). (Jack Magarrell)

Colleges try to move in on vocational education. 15(12) (November 12, 1977). (Robert L. Jacobson)

Earned degrees conferred in 1976. 15(6) (October 3, 1977).

Enrollment surveys agree on increase in fall total. 19(12) (November 19, 1979).

Enrollments steady, applications down at graduate schools. 15 (December 12, 1977).

Enrollments up a surprising 2.4 percent. 19(10) (November 5, 1979). (Jack Magarrell)

Estimated fall enrollment. 19(11) (November 13, 1979).

Extra salaries received by faculty members. 19(7) (October 15, 1979).

Fact-file, state scholarship programs. (November 17, 1976, 6-7).

The freshmen who weren't really there. 15(1) (September 6, 1977). (Jack Magarrell)

Graduate enrollments steady, despite drop in applications. 19(15) (December 10, 1979). (Janet Hook)

Graduate study is attracting more women. 19(13) (November 26, 1979).

Growth a full-time faculty. 19(9) (October 29, 1979).

Higher education's index of inflation goes up 6.4 percent. 15(1) (September 6, 1977).

The house votes to aid programs training teachers in science and mathematics. 19(12) (November 19, 1979). (Anne C. Roark)

How earnings in academia compare with other fields. 19(7) (October 15, 1979).

Humanities faces hard struggle in 2-year colleges. 19(11) (November 13, 1979). (Lorenzo Middleton)

Institute of independent colleges and universities responds to Thackrey's report on private institutions. 19(9) (October 29, 1979). (William A. Shoemaker, Chairman, Research Advisory Council, NIICU).

Libraries, NCES data descriptions. (February 11, 1980).

Minority students found lagging in 2-year degrees. 19(7) (October 15, 1979). (Lorenzo Middleton)

The National Center for Educational Statistics: Its reliability and its coordination of other agencies. 15 (November 14, 1977). ("To the Editor," by Maryse Eymonerie)

NCES projections of enrollment. (January 7, 1980).

Non-credit enrollment proposal dropped. *19*(12) (November 19, 1979). (Robert L. Jacobson)

Private colleges closed or shifted to public control. *15*(12) (November 12, 1977).

Private colleges that opened or merged between spring, 1970 and fall, 1976. *15* (November 28, 1977).

Proportion of degrees awarded to women. *19*(3) (September 17, 1979).

Recession sends students to community colleges. *19*(4) (September 24, 1979).

Small rise in enrollment predicted for this fall. *15*(3) (September 19, 1977). (Jack Magarrell)

State colleges appeal for more financial support, less outside regulation. *19*(13) (November 26, 1979). (Robert L. Jacobson)

Surveys show drop in social-science, humanities majors. *15* (December 19, 1977).

Tuition up 7.9 percent on state campuses. *19*(12) (November 19, 1971).

20-year trends in higher education. *15*(3) (September 19, 1977).

Chronister, Jay L. Private higher education: After the depression, what? *College and University Journal*, 1974, *13*(1), 12-14.

Coldren, S. L., Mertins, P., Knepper, P. R., Brandt, N., Dickmeyer, N., Farmer, J., & Van Alstyne, C. *ACE/NCES experimental project on financial health indicators using HEGIS data*. Washington, DC: American Council on Education, 1979.

Coldren, S. L. *A national list of current projects related to financial indicator development for colleges and universities*. Washington, DC: American Council on Education, Economics and Finance Unit, August 1978.

Coles, H. William. *College student perceptions: 1975 freshmen academic and career attitudes and expectations*. New York: SUNY Buffalo, Student Testing and Research Office, October 1976.

College Entrance Examination Board. *The New York Times guide to continuing education in America*. New York: Quadrangle Books, 1972.

College Entrance Examination Board. A role for marketing in college admissions. Papers presented at the colloquium on College Admissions, May 16-18, 1976, Fontana, Wisconsin. Available from: College Entrance Examination Board, New York, 1976.

College grads and jobs. New York: McGraw-Hill Book Co., April, 1973.

Collier, D. J. *Assessing financial distress in colleges and universities*. Boulder, CO: NCHEMS, September 1979.

Collier, D. J. *The analysis of institutional financial health: A workshop report*. Boulder, CO: NCHEMS, October 1973.

Collier, D. J. *A discussion of college and university financial health*. Boulder, CO: NCHEMS, August 1973.

Collier, D. J. *The determination of institutional financial distress: A proposal for decision-making*. Boulder, CO: NCHEMS, August 1973.

*Collier, D. J. *Indicators of institutional financial health*. Unpublished paper, January 1976.

Collier, D. J. *The value of uniform financial data for the institution and the state: A case study*. Boulder, CO: NCHEMS, 1980.

Collier, D. J. *Higher education finance manual: An overview*. Boulder, CO: NCHEMS at WICHE (Tech. Report #37), December 1972.

Collier, Douglas J., & Allen, Richard H. *Higher education finance manual: Data providers' guide* (Vol. 1). Boulder, CO: NCHEMS, 1980.

Collier, Douglas J., & Allen, Richard H. *Higher education finance manual: Data users' guide* (Vol. 2). Boulder, CO: NCHEMS, 1980.

*Collier, Douglas J., & Patrick, Cathleen. *A multivariate approach to the analysis of institutional financial conditions*. Boulder, CO: NCHEMS, September 1978.

Colorado State Board for Community Colleges and Occupational Education. *Student access and Colorado's community junior colleges*. Denver, CO: Colorado State Board for Community Colleges and Occupational Education, 1977.

Colorado State Board for Community College & Occupational Education. *Student access and Colorado's community junior colleges*. Denver, CO: Colorado State Board for Community College and Occupational Education, 1977.

Columbus College. *Columbus College faculty handbook*. Columbus, GA: Columbus College, 1974, 1-74.

Commission on Academic Development. *Report of the Commission on Academic Development*. Canada: Victoria University, 1972, 1-122.

Commission on Academic Tenure in Higher Education. *Faculty tenure*. San Francisco: Jossey-Bass, 1973.

Commission on Independent Colleges and Universities. *A capacity for innovation: 1976 master plan of the Commission on Independent Colleges and Universities*. Albany, NY: Commission on Independent Colleges and Universities, June 1976.

Commission on Independent Colleges and Universities. *1972 statewide master plan for private colleges and universities of the State of New York*. Albany, NY: Commission on Independent Colleges and Universities, 1972.

Commission on Non-Traditional Study. *Diversity by design*. San Francisco: Jossey-Bass, 1973.

Commission on Private Philanthropy and Public Needs. *Giving in America*. New York: Commission on Private Philanthropy and Public Needs, 1975.

Commission on Private Philanthropy and Public Needs. *Guide to sponsored research of the Commission on Private Philanthropy and Public Needs*. New York: Commission on Private Philanthropy and Public Needs in cooperation with United Way of America, 1975.

Committee on College and University Accounting and Auditing. *Audits of colleges and universities*. New York: American Institute of Certified Public Accountants, 1973.

Committee on Compensation. Nearly keeping up: Report on the economic status of the profession, 1976-77. *AAUP Bulletin*, 1976, 195-206.

Committee for Economic Development. *The management and financing of colleges*. New York: Committee for Economic Development, 1973.

Congressional Budget Office. *Inequalities in the educational experience of black and white Americans*. Washington, DC: U.S. Government Printing Office, 1977.

Consortium of Associations for Education Dissemination. *Private organizations and associations: Information resources for education*. Arlington, VA: Consortium of Associations for Educational Dissemination, 1978. Sponsored by Consortium of Associations for Educational Dissemination.

Constable, Robert T. A study of admissions policies in undergraduate education. *Journal of Education for Social Work*, 1977, *13*(3), 12-24.

Coombs, Philip H., & Hallak, J. *Managing education costs*. New York: Oxford University Press, 1972. Study was sponsored by UNESCO: International Institute for Educational Planning.

Cooper, John A. D. The Association of American Medical Colleges: Looking ahead. *Journal of Medical Education*, 1977, *52*(1), 11-19.

Cornell Center of Improvement in Undergraduate Education. The yellow pages of undergraduate innovations. *Change*, 1974.

*Corson, John J. *The governance of colleges and universities: Modernizing structure and processes*. St. Louis, MO: McGraw-Hill Book Co., 1975.

Council for Financial Aid to Education. *Voluntary support for education 1973-74*. Washington, DC: CFAE, 1975.

Council for Postsecondary Education. Policy recommendations, a system of establishing tuition and fees as a proportion of educational costs. Olympia, WA: Washington State Council for Postsecondary Education, March 1976.

Council, Kathryn. *A profile of entering freshmen.* North Carolina: North Carolina State University, November 1975.

Council of Economic Advisors. *Economic indicators, July 1975*. Washington, DC: U.S. Government Printing Office, 1975.

Council of Graduate Schools in the U.S. *Programs for disadvantaged students in graduate school*. Princeton, NJ: Educational Testing Service, January 1970, 1-17.

Cross, K. P. *Beyond the open door: New students to higher education*. San Francisco: Jossey-Bass, 1976.

Cross, K. Patricia. *What do you know about the goals of the community college*? *Community and Junior College Journal*, 1974, *44*(7), 34-35.

Crossland, F. E. *Minority access to college: A Ford Foundation report*. New York: Schocken Books, 1971.

Cunningen, Donald. Graduates of black colleges in a white graduate school. *Integrated Education*, 1978, *16*(3).

Curry, Denis, & Johnson, Jackie. *Survey of faculty salaries and fringe benefits of selected institutions in response to Senate Resolution 1976-209*. Washington: Washington State Council for Postsecondary Education, March 1977, 60 pp.

Cutlip, S. M. The challenge ahead. *College and University Journal*, 1973, *12*(5), 15-21.

" D "

Daniel, Evelyn H. et al. Guidelines for learning resources in libraries of the California State University and College System. California: California State University, 1975.

Dart, F. E. Observations on the obstacle course. International Educational and Cultural Exchange, 1975, 11(2), 29-32.

Davidson, James F. The present discontents: Eleven proposals toward campus rest. Journal of Higher Education, 1970, 41(9), 723-731.

Davis, Junius A. Is the SAT biased against black students? College Board Review, 1971, 81, 4-9.

Degress conferred by postsecondary institutions in South Carolina: Academic years 1976-77 and 1977-78. South Carolina: South Carolina Commission on Higher Education, January 1979.

Dei, J. Assessing faculty effort. San Francisco: Jossey-Bass, Inc., Summer 1974.

Dennison, Lynn C. The organization of library and media services in community colleges. College and Research Libraries, 1978, 39(2), 123-129.

Dickey, Frank G. The status of specialized accreditation. Community and Junior College Journal, 1971, 42(1), 14-17.

Dickmeyer, N. First steps in financial analysis. New directions for higher education, assessing financial health. San Francisco: Jossey-Bass, Inc., 1979, No. 26.

Dickmeyer, N., Hopkins, D. S. P., & Massy, W. F. Trades. A model for interactive financial planning. Business Officer, 1978, 11(9), 22-27.

Dickmeyer, N., & Hughes, K. S. Self assessment of financial condition. NACUBO. Washington, DC: National Association of College and University Business Officers, 1979.

Dickmeyer, Nathan, & Coldren, Sharon L. A national list of current projects related to financial indicator development for colleges and universities. Washington, DC: American Council on Education, Economics and Finance Unit, August 30, 1978.

A digest of reports of the Carnegie Commission on Higher Education. New York: McGraw-Hill, 1974.

Dissemination networks: Information resources for education. San Francisco: Prepared for the U.S. Office of Education by the Far West Laboratory for Educational Research and Development, 1978.

Donovan, Carl. Report on student services and activity fee policies at four-year public institutions of Washington. A response to House of Representatives Resolution 1976-66. Report No. 77-12. Olympia, WA: Washington State Council for Postsecondary Education. 146 pp.

Drazek, S. J. Adult continuing education growth: No time for complacency. In M. R. Koller, Retirement, No--Back to college, Yes. Intellect, 1977, 106(2387), 49.

Dresch, S. P. The crisis of the scholarly enterprise. In D. G. Trite (Ed.). Planning the future of the undergraduate college. 1975.

Dresch, Stephen P. An economic perspective on the evolution of graduate education. Washington, DC: National Academy of Sciences, March 1974.

Dressel, Paul L. Institutional research in the university. San Francisco: Jossey-Bass, Inc., 1971.

Dressel, Paul L. Return to responsibility. San Francisco: Jossey-Bass, Inc., 1972.

Dressel, Paul L., & Delisle, Frances H. Blueprint for change: Doctoral programs for college teachers. Iowa City, IA: American College Testing Program, 1972. 203 pp.

Dressel, Paul L., Johnson, F. C., & Mercles, P. M. The confidence crisis. San Francisco: Jossey-Bass, 1970.

Dressel, Paul, & Pratt, Sally B. The world of higher education: An annotated guide to the major literature. San Francisco: Jossey-Bass, Inc., Publishers, 1972. (c. 1971)

Duke University. Departmental governance interim report. ERIC Document Reproduction Service, ED 041 553, May 1970, 1-33.

Dukiet, Kenneth H. The cost of higher education 1973-74. College Management, 1974, 9(1), 8-18; 47

Dunham, E. Alden. Colleges of the forgotten Americans, a profile of state colleges and regional universities. New York: McGraw-Hill Book Co., 1969.

Duryea, E. D., & Fish, Robert S. Faculty unions and collective bargaining. San Francisco: Jossey-Bass, Inc., 1973.

Duryea, E. D., & Needy, J. C. College bargaining: Impact on government. Washington, DC: Association of Governing Boards of Universities and Colleges, 1977.

Dutchess Community College. Region 3 occupational education plan, 1976-81. Poughkeepsie, NY: Dutchess Community College, 1976.

" E "

Eble, Ken. What to say about teaching. *ADA Bulletin*, 1978, *57*, 30-33.

Eckert, R. E. Participation in university policy making: A second look. *AAUP*, 1970, *56*(3), 308-318.

Eddy, E. D. MA foundation executives speak. *AGB Reports*, 1977, *19*(4), 23.

Education for a nation. *Congressional Quarterly*, 1972.

Edwards, M. A. *College student perceptions*. New York: SUNY, Buffalo, Student Testing and Research Office, November 1976.

El-Khawas, E. H., & Furniss, W. T. Faculty tenure and contract systems: 1972-1974. *Higher Education Panel Report No. 22*. Washington, DC: American Council on Education, 1974.

Elements related to the determination of costs and benefits of graduate education. Washington, DC: The Council of Graduate Schools in the United States/NACUBO, September 1971. Study was sponsored by the Council of Graduate Schools.

Ellis, Susanne. *Enrollments and degrees, AIP report*. ERIC Document Reproduction Service, ED 143 502, June 1977.

El-Khawas, Elaine. *Public and private higher education: Differences in role director and clientele*. Washington, DC: American Council on Education, 1976. Study was sponsored by the American Council on Education.

Embry, J. D., Brandhorst, W. T., & Marron, H. *Survey of ERIC database search services*. Washington, DC: National Institute of Education, Educational Resources Information Center, July 1974.

Eulau, H. & Quinley, H. *State officials and higher education*. New York: McGraw-Hill, 1970.

Ewald, A. A., & Kiker, B. F. A model for determining the input costs of university degrees. *Socio-Economic Planning Sciences*, 1970, *4*(3), 331-340.

" F "

Fadil, V. A., & Thrift, J. S. Openings, closings, mergers, and accreditation status of independent colleges and universities, Winter 1970 through Summer 1978. An occasional research report. Washington, DC: National Institute of Independent Colleges and Universities, National Association of Independent Colleges and Universities, December 1978.

Farmer, James. An approach to planning and management system implementation. California: California State Colleges, Division of Analytic Studies, 1971.

Farmer, James. A proposal: Interim national standard procedures for deriving pre-student costs in postsecondary educational institutions. Washington, DC: National Commission on the Financing of Postsecondary Education, December 31, 1973. (Staff Report) Study was sponsored by National Commission on the Financing of Postsecondary Education.

*Farmer, James. Financial health of independent colleges and universities in New York. Albany, NY: Temporary State Commission on the Future of Postsecondary Education, January 1977.

Farmer, J. A., Jr. Professionalization in higher adult education administration. Ann Arbor, MI: University Microfilms, #7089, 1969.

Far West Laboratory for Educational Research and Development. Dissemination networks: Information resources for education. San Francisco: Far West Laboratory for Educational Research and Development, 1978. Sponsored by USOE.

Fawcett, Greg. Simulating student flow: Institutional research applications. Florida: Southern Association for Institutional Research, October 1978.

Fernekes, Robert W. Evaluation of the community college book collection. Peabody Journal of Education, 1976, 53(4), 260-265.

Ferrin, Richard I. Students, budgets and aid awarded southwestern colleges. Higher Education Surveys. Palo Alto, CA: College Entrance Exam. Brd., April 1971.

Ferris, Peter. The part-time instructor: An analysis. California: Los Rios Community College District, March 1976. 14 pp.

Finkin, Matthew W. Some thoughts on the Powell opinion in Bakke. AAUP Bulletin, 1979, 65(3), 192-196.

Finn, C. E., Jr. Scholars, dollars and bureaucrats. Washington, DC: The Brookings Institute, c1978.

Fischer, C., Jr. The use and effectiveness of the case study method in the inservice training of college and university administrators. ERIC Document Reproduction Service, ED 078 734, November 1972, 1-194.

Florida State Department of Education. Florida's commitment to equal access to equal opportunity in public higher education. Florida: State Department of Education, February 1978, 251.

Folger, John K., Astin, Helen S., & Bayer, Alan E. Human resources and higher education. New York: Russell Sage Foundation, 1970.

*Frances, C., & Coldren, S. L. Assessing financial health. New Directions for Higher Education, 1979, 7(2), 1-100.

Freeman, R. B. Black elite. New York: McGraw-Hill Book Co., May 1977.

*Freeman, R. B. The over-educated American. Cambridge, Mass.: Academic Press, 1976.

Freeman, R. B. Supply and salary adjustments to the changing science manpower market: Physics, 1948-1973. American Economic Review, 1975, 65(1), 27-39.

Freeman, R. B., & Hollomon, J. Herbert. The declining value of college going. Change, 1975, 7(7), 24-31; 62.

Friedman, H. A.,& Ruck, S. K. Why not every man? Integrated Education, 1975, 13(6).

Friedman, Milton. Bureaucracy scorned. Newsweek, December 29, 1975, 47.

Fulton, Oliver, & Trow, Martin. Research activity in American higher education. Sociology of Education, 1974, 47(1), 29-73.

Furniss, W. T. (Ed.). Higher education for everybody? Issues and implications. Washington, DC: American Council on Education, 1971.

" G "

Galambos, Eva C. *Racial composition of faculties in public colleges and universities of the South*. Atlanta, GA: Southern Regional Education Board, 1979.

Gamso, G. *An approach to cost studies in small colleges*. Boulder, CO: NCHEMS, 1978.

Gappa, Judith M. *Improving equity in postsecondary education--new directions for leadership.* Washington, DC: U.S. Government Printing Office, December 1977.

Garbarino, J. W. (Ed.). Symposium: Faculty unionism in the West. *Industrial Relations*, 1974, *13*(1).

Garbarino, J. W. *Faculty bargaining: Change and conflict*. New York: McGraw-Hill Book Co., 1975. Study was sponsored by the Carnegie Commission on Higher Education and the Ford Foundation.

Garfield, I. *The condition of education, part 2, 1980 edition: NCES programs and plans.* Washington, DC: National Center for Education Statistics, 1980.

Garlock, Jerry C. *Evaluation as a change agent*. California: California Junior College Association, Commission on R & D, May 1973. 117 pp.

General Accounting Office. *Analysis of the University of the District of Columbia consolidated master plan development*. Washington, DC: U.S. Government Printing Office, May 1978.

General Accounting Office. *Problems and outlook of small private liberal arts colleges*. Washington, DC: U.S. Government Printing Office, August 25, 1978.

Gibson, Oliver, & Stetar, Marilyn. *Preparatory program at SUNY Buffalo: A report of experience.* Columbus, OH: University Council for Education Administration, May 1976.

Gilbert, F. (Ed.). *Minorities and community colleges, data and discourse*. Washington, DC: American Association of Community and Junior Colleges, 1979.

Gilford, Dorothy M. Statistical snapshots of adult continuing education. *Journal of Higher Education*, 1975, *46*(4), 409-426.

Gilli, Angelo C., Sr. Vocational associate degree: Their place in the university. *Community and Junior College Journal*, 1975, 28-29; 34.

Gintis, H. Education, technology, and the characteristics of worker productivity. American Economic Review, 1971, 61(2), 266-280.

Glenn, James R., & March, James G. A note on attrition among college presidents, 1971-74. Research in Higher Education, 1975, 3(4), 323-328.

Glenny, Lyman A. et al. Presidents confront reality: From EDIFICE complex to university without walls. San Francisco: Jossey-Bass, January 1976.

Glenny, Lyman A. State coordination of 2-year college financing: A necessity. New Directions for Community Colleges, 1974, 2(2), 53-68.

Glenny, Lyman A., & Bowen, Frank M. Signals for change, stress indicators for colleges and universities. A report prepared for the California Postsecondary Education Commission, Draft for discussion, January 1980.

Glenny, Lyman A., Bowen, Frank M., Meisinger, Richard J., Jr., Morgan, Anthony W., Purves, Ralph A., & Schmidtlein, Frank A. State budgeting for higher education: Data digest. Berkeley, CA: University of California, Center for Research and Development in Higher Education, 1975.

Glenny, Lyman A., & Kidder, James R. State tax support of higher education: Revenue appropriation trends and patterns 1963-1973. Denver, CO: Education Commission of the States (Report #47), April 1974.

Glueck, William F., & Jauch, Lawrence R. Sources of research ideas among productive scholars. Implications for administrators. Journal of Higher Education, 1975, 46(1), 103-114.

Godwin, W. L., & Mann, P. B. (Eds.). Higher education: Myths, realities, and possibilities. Atlanta, GA: Southern Regional Education Board, November 1972.

Goldwin, R. A. Should the humanities be forgotten? Private colleges in danger. Vital Speeches, 1975, 41, 443-445.

Gordon, Margaret S. Higher education and the labor market. New York; McGraw-Hill Book Co., 1974. Study sponsored by the Carnegie Commission on Higner Education.

Gordon, Travis L., & Johnson, Davis G. Study of U.S. medical school applicants 1975-76. Journal of Medical Education, 1977, 52(9), 707-730.

Graduate students admissions survey, 1975. New York: State University of NY, Albany, Central Staff Office of Institutional Research (Report No. 1-76), November 1976.

Gray, R. G. et al. *Department programs, an assessment of current efforts*. Washington, DC: National Center for Higher Education Management Systems, May 1978.

Graziano, Anthony. *Migration of Illinois students*. IL: Illinois University, 1968, 1-10.

Green, Agnes Ann. *Women on the chemistry faculties of institutions granting the Ph.D. in chemistry*. Washington, DC: American Chemical Society, October 1976. 7 pp.

Greene, Robert Ford. College attitudes and responses regarding criteria for promotion. *Improving College and University Teaching, 1976*, *24*(4), 235-239.

Grissom, J. David et al. *Statewide cost study of Kentucky's public higher education institutions, fiscal year 1975-76*. Frankfort, KY: Council of Higher Education, July 1978.

Gross, Malvern J., Jr. *Position paper on college and university reporting*. Washington, DC: Price, Waterhouse & Co., 1975.

Gross, Richard. Faculty growth contracts. *Educational Horizons.* 1976-77, *55*(2), 79.

Gross, T. L. Open access and the humanities. *Change*, 1975, *7*(6), 8.

Gulko, W. W. *Program classification structure*. Boulder, CO: NCHEMS, June 1970. Study was sponsored by WICHE.

" H "

Hagemeyer, Richard H. A nontraditional approach--planning for growth. Community and Junior College Journal, 1975, 46(1), 13-15.

Hale, J. A., & Rawson, T. M. Developing statewide higher education funding formulas for use in a limited growth environment. Journal of Education Finance, 1976, 2, 16-32.

Hall, Lawrence and Associates. New colleges for new students. San Francisco: Jossey-Bass, 1974.

Halperin, Samuel. Is the federal government taking over education. Compact, 1976, 10(3), 2-4.

Halstead, D. Kent. Statewide planning in higher education. Washington, DC: U.S. Government Printing Office, 1974.

Halstead, D. Kent. Higher education prices and price indexes. Washington, DC: U.S. DHEW, 1975.

Halstead, D. Kent. Higher education prices and prices indexes: 1975 Supplement. Washington, DC: Department of HEW, 1976. Sponsored by Department of HEW, Office of Education.

Halstead, D. Kent. Higher education prices and price indexes: 1978 Supplement. Washington, DC: USDHEW, 1978.

Halstead, D. Kent. Tax wealth in fifty states. Washington, DC: USDHEW, 1978.

Hanson, Ray. National conference: Trade and industrial education professional personnel. Stout, WI: University of Wisconsin, January 1976, 260 pp.

Harcleroad, Fred F. Issues of the seventies. San Francisco: Jossey-Bass, 1970.

Harmon, L. R. A century of doctorates. Support from the National Science Foundation, Division of Science Resources Studies. Washington, DC: National Academy of Sciences--National Resources Council, 1977.

Harris, Seymour E. A statistical portrait of higher education. New York: McGraw-Hill Book Co., 1972. Study sponsored by the Carnegie Commission on Higher Education.

Hartman, Robert. Credit for college. New York: McGraw-Hill, 1971.

Hartman, R. The rationale for federal support of higher education. In L. Solomon, & P. Taubman (Eds.). Does college matter? New York: Academic Press, 1973, 271.

Hartnett, R. T. College and university trustees. In The state of the university. Beverly Hills, CA: Sage Publications, 1970.

*Harvard Graduate School of Education.

Weathersby, G. B., Jackson, G. A., Jacobs, F., St. John, E. P., & Tingley, T. Final report. The development of institutions of higher education: Theory and assessment of impact of four possible areas of federal intervention. Cambridge, Mass., January 1977.

St. John, E. P., Tingley, T., & Gallos, J. Appendix C. Descriptive analysis of institutional change using HEGIS, CFAE, OCR, and Title III data bases. Cambridge, Mass., January 1977.

Jackson, G. A. Appendix F. Description of mergers data base. Cambridge, Mass., January 1977.

Trueheart, W. E., & Weathersby, G. B. Appendix G. Production function analysis in higher education: General methodology and application to four year black colleges. Cambridge, Mass., January 1977.

Hause, J. Ability and schooling as determinants of lifetime earnings or if you're so smart, why aren't you rich? In F. T. Juster (Ed.). Education, income and human behavior. New York: McGraw-Hill Book Co., 1975.

Hause, J. Earnings profile by ability and schooling. Journal of Political Economy, 1972, 80(3), 108-138.

Henderson, C. Changes in enrollment by 1985. Policy Analysis Service Reports, June 1977, 3(1). Washington, DC: American Council on Education.

Henderson, C., & Flummer, J. Adapting to changes in the characteristics of colleges--age youth. ERIC Document Reproduction Service, ED 162-594, December 1978.

Hendrickson, R. M., & Jones, M. Edward. Nonresident student tuition rights v. state fiscal integrity. Journal of Law and Education, 1973, 2(3), 443-460.

Henry, David P. Challenges past, challenges present: An analysis of American higher education since 1930. San Francisco: Jossey-Bass, November 1975.

Henry, R. M. Credit analysis of colleges and universities. Inter-office memorandum to the Student Loan Marketing Association, Washington, DC, May 6, 1975.

Higgins, A. S. Quantity and quality of doctoral overproduction. *Educational Record*, 1971, *52*(3), 262-266.

Higher education opportunity program final report 1972-73. Albany, NY: State Education Department, Division of Higher Education, 1973. 108 pp.

Hilles, William C. et al. *Report on medical school faculty salaries, 1977-78*. Washington, DC: Association of American Medical Colleges, March 1978. 139 pp.

Hodgkinson, Harold L. Adult development: Implications for faculty and administrators. *Educational Record*, 1974, *55*(4), 263-274.

Hodgkinson, Harold L. *Institutions in transition*. New York: McGraw-Hill Book Co., 1971. Study sponsored by the Carnegie Commission on Higher Education.

Hoffman, Hillard R., & Bloom, Allan M. et al. Cost studies: Their uses and misuses in academic administration. Panel discussion presented at the Nineteenth Annual Forum, Association for Institutional Research, San Diego, CA, May 1979.

Hollander, T. E. Planning for changing demographic trends in public and private institutions. *New Directions for Institutional Research*, 1975, *2*(2).

Hooper, Billy E., & Brown, Roger E. Student attrition in North American Veterinary schools. *Journal of Veterinary Medical Education*, 1975, *2*(1), 36-39.

Hopkins, D. S. P. Analysis of faculty appointment, promotion, and retirement policies. *Higher Education*, 1974, *3*(4), 397-418.

Hopkins, D. S. P. Faculty early retirement programs. *Operations Research*, 1974, *22*(3), 455-467.

Howe, F. *Seven years later: Women's studies program in 1976*. Washington, DC: National Advisory Council on Women's Education Programs, June 1977.

Howell, D. L. Organizing the office of the president. *College Management*, 1972, *7*(7), 27; 30.

Hoy, John C. Higher education and youth unemployment. *Educational Record*, 1978, *59*, 70-76.

Huber, C. E. et al. Report of staffing recommendations for Virginia institutions of higher education. Richmond: State Council for Higher Education of Virginia, June 1976.

Huckfelt, Vaughn E. *A forecast in changes in postsecondary education*. Boulder, CO: NCHEM Systems at WICHE, 1972.

Hudgins, G., & Phillips, I. *People's colleges and trouble: A financial profile of the nation's state universities and land grant colleges*. Washington, DC: National Association of Schools and Land Grant Colleges.

Hudson, Rosen R. A. Occupational role innovations and sex role attitudes. *Journal of Medical Education*, 1974, *49*(6), 554-561.

*Hughes, Everett C. et al. *Education for the professions*. New York: McGraw-Hill Book Co., October 1973.

Hurd, Joseph. *Enrollment and cost effects of financial aid plans for higher education*. ERIC Document Reproduction Service, ED 158 633, July 1977.

Hyatt, James A., & Dickmeyer, Nathan. *Joint study group on the utility of HEGIS finance data for institutional and higher education sector comparisons, draft report*. Washington, DC: National Association of College and University Business Officers, American Council on Education, National Center for Education Statistics, May 22-23, 1980.

" I "

Ifidon, Sam E. Factors in the production of higher degrees in the humanities and the social sciences. International Library Review, 1978, 10(3), 301.

Igneri, John E. How to increase your schools income. American School and University, 1979, 51(8), 40; 42-43; 46-47.

Institute for the Study of Educational Policy. Equal educational opportunity for blacks in U.S. higher education, an assessment. Washington, DC: Howard University Press, 1976.

Institute for the Study of Educational Policy. Equal educational opportunity, more promise than progress. Washington, DC: Howard University Press, 1976.

Illinois Board of Higher Education. Faculty compensation in Illinois institutions of higher education: Summary of findings. Springfield, IL: Illinois Board of Higher Education, 1977.

" J "

Jabker, E. H., & Halinski, R. S. Instructional development and faculty rewards. Illinois: Illinois State University, April 1977.

Jackson, A., & Weathersey, A. Individual demand for higher education. Journal of Higher Education, 1975, 46(6), 623-652.

Jackson, Gregory A. Appendix F, description of merged data base. In Final report. The development of institutions of higher education: theory and assessment of impact of four possible areas of federal intervention. Cambridge, Mass.: Harvard School of Education, 1977.

Jandt, Fred E. A new method of student evaluation of teaching. Improving College and University Teaching, 1973, 21(1), 15-16.

*Jellema, William W. From red to black? San Francisco: Jossey-Bass, 1973. Study was sponsored by the Jossey-Bass Series in Higher Education.

*Jellema, William W. Higher education finance: A comparative study of matched samples of black and white private institutions. Atlanta, GA: Southern Regional Education Board, 1972. 42 pp.

Jenny, Hans H. The bottom line in college and university finance. Business Officer. National Association of College and University Business Officers, February 1979.

Jenny, H. H. The differential impact of student aid discounts on cash flow in four-year liberal arts colleges, 1971-75. Wooster, OH: College of Wooster, 1976.

Jenny, Hans H. Financial viability in postsecondary education: Data requirements for sound policy formulation and control during the 1980s and 1990s. Washington, DC : Lawrence Johnson and Associates, 1978

*Jenny, Hans H. Financing higher education. Journal of Education Finance, 1975a, 1, 26-35.

*Jenny, Hans H. Higher education finance: Health and distress in formulating policy in postsecondary education: The search for alternatives. Washington, DC: American Council on Education, 1975b. (J. F. Hugher, & O. Mills, Eds.).

*Jenny, Hans H. Philanthropy in higher education: A study of the impact of voluntary support on college and university income, with some findings concerning its effect on institutional financial health. New York: Commission on Private Philanthropy and Public Needs, 1975.

Jenny, Hans H., & Wynn, G. Richard. *The golden years, a study of income and expenditure growth and distribution of 48 private four-year liberal arts colleges, 1960-68*. Wooster, OH: The College of Wooster, 1970.

*Jenny, H. H., & Wynn, G. R. *Indicators of financial distress in higher education*. Address prepared for Annual Meeting, Pennsylvania Association for Higher Education, Harrisburg, Pennsylvania, April 21-22, 1974.

*Jenny, H. H., & Wynn, G. R. *The turning point: A study of income and expenditure growth and distribution of 48 private four-year liberal arts colleges, 1960-1970*. Wooser, OH: The College of Wooster, 1972.

Jensen, Clayne. An activity center for both athletic events and cultural events. *Journal of Physical Education and Recreation*, 1975, *46*(4), 28-29.

Jerome, J. *Culture out of anarchy*. New York: Herder & Herder, 1970.

Johnson, C. Thomas. Harris Trust & Savings Bank System for evaluating the financial status of colleges and universities. Chicago, IL: Harris Trust and Savings Bank, October 1978.

Johnson, Dennis L. Marketing the uncola college. *Community and Junior College Journal*, 1977-78, *48*(4), 14-17.

Johnson, G. P., & Leslie, L. L. Increasing public tuition in higher education: An alternative approach to the equity issue. *Educational Administration Quarterly*, 1976, *12*, 27-42.

Johnson, Lawrence & Associates. *Final report. NCES postsecondary education core design project: Recommendations for data collection activities and policy considerations*. Washington, DC: National Center for Education Statistics, September 1978.

Johnston, Denis F. Sixty million strong: Their challenges to education. *Liberal Education*, 1976, *62*(2), 177-184.

The Joint Study Group on the Utility of HEGIS Finance Data for Institutional and Higher Education Sector Comparisons. Draft Report. Washington, DC: NACUBO/ACE/NCES, 1980.

(J. W. Hyatt, & N. Dickmeyer, Chair.)

E. F. Cammack. The utility of HEGIS finance data: A university system perspective. Issue paper, May 1980

L. Lapovsky. The utility of HEGIS finance data: A state board perspective. Issue paper, May 1980.

M. McCoy. The utility of HEGIS finance data: A researcher's perspective. Issue paper, May 1980.

R. K. Thompson. State and institutional comparative analyses using HEGIS data: A review. Issue paper, May 1980.

[illegible]yner, Dr. T. Community colleges . . . salaries . . . New York State. New York: NY Public Employees Relations Board, March 1977. 134 pp.

Juster, F. T. (Ed.). Education, income and human behaviors. New York: McGraw-Hill, 1975.

" K "

Karr, J., & Stedman, J. *Comparison and analysis of alternative proposals for federal student assistance*. Washington, DC: Library of Congress, Congressional Research Service, April 3, 1978.

Keast, W. R. (Chair), & Macy, J. W., Jr. *A report and recommendations by the Commission on Academic Tenure in Higher Education*. San Francisco, CA: Jossey-Bass Publishers, 1973.

*Keeton, Morris T. *Models and mavericks: A profile of private liberal arts colleges*. New York: McGraw-Hill, 1971. Sponsored by the Carnegie Commission on Higher Education.

Kelly, Richard et al. Faculty role preferences of students in 3 types of colleges. *Improving College and University Teaching*, 1973, *21*(1), 58-59.

Kemerer, Frank R., & Baldridge, J. Victor. The impact of faculty unions on governance. *Change*, 1975-76, *7*(10), 50-51.

Kennedy, T. J. et al. Factors contributing to current distress in the academic community. *Science*, 1972, *175*(4022), 599-607.

Kerr, Clark. *The states and higher education*. Supplement to a commentary of the Carnegie Foundation for the advancement of teaching, 1976. Study sponsored by the Carnegie Foundation for the advancement of teaching.

Kershaw, J. A. *The very small college: A report to the Ford Foundation*. New York: Ford Foundation, January 1976.

Kevin, Richard C., & Liberty, Paul G. *The influence of students' orientation toward college and college major upon students' attitudes and performance in a computer-based education course*. Austin: Texas University, Computer Assisted Instruction Lab., April 1974.

Kiffer, T. E., & Burns, M. A. *Human services occupations in the two-year college: A handbook*. ERIC Document Reproduction Service, ED 071 651, May 1972, 1-134.

King, Donald B. Private college financing. *Educational Record*, 1975, *56*(2), 96-99.

Knezevich, S. U. *Doctorate needs in educational administration during the 1970's and 1980's: A preliminary analysis*. Columbus, OH: University Council for Educational Administration, 1974.

Knoell, Dorothy, & McIntyre, C. Planning colleges for the community. San Francisco: Jossey-Bass, Publishers, 1974.

Kramer, Rena et al. Characteristics of enrollees and non-enrollees among freshmen, 1972. New York: CUNY, April 1974, 1-21.

Kratcoski, Peter C., & Huber, James H. Faculty role preferences in different institutional settings. Intellect, 1973, 102, 126-128.

Kronovet, E. The managers of affirmative action and their role in the selection process. New York: Appleton-Century-Crofts, 1977.

" L "

Ladd, E. C., Jr., & Lipset, S. M. Politics of academic natural scientists and engineers. *Science*, 1972, *176*(4039), 1091-1100.

Lanier, Lyle H. Comments on statewide reallocation through program priorities. *Educational Record*, 1973, *54*(3), 184-189.

Lanier, L. H., & Anderson, C. J. *A study of the financial condition of colleges and universities, 1973-75*. Washington, DC: American Council on Education, Special Report, Office of Administrative Affairs and Educational Statistics, October 1975.

Lapovsky, Lucy. The utility of HEGIS finance data: A state board perspective. Issue paper for the Joint Study Group on the Utility of HEGIS Finance Data for Institutional and Higher Education Sector Comparisons. Washington, DC: National Association of College and University Business Officers, American Council on Education, and National Center for Education Statistics, May 1980.

Larsen, Suzanne W. Financial support of higher education. From the 1978 American Institute of Research Forum, Houston, Texas.

LaSalle, J. P. Appointment, promotion and tenure under steady-state staffing. *Notices of the American Mathematical Society*, 1972, *19*(1), 69-73.

Lastilla, Anne. *Credit transfer policies at Louisiana colleges*. Louisiana: Louisiana State Coordinating Council for Higher Education, July 1973, 1-67.

Latest in design: Student housing, megastructures, track stadium, physical education center, library building. *American School and University*, 1974, *47*(2), 44b; 44d; 441.

Lee, Alfred. *Performance budgeting for undergraduate delivery systems in the 1980's*. ERIC Document Reproduction Service, ED 138 151, April 1977.

Lee, Eugene, & Bowen, Frank M. *Managing multicampus systems: Effective administration in an unsteady state*. San Francisco: Jossey-Bass, 1975.

Lee, J. B., Carlson, D. E., Davis, J. S., & Hershberger, A. M. *Student aid: Descriptions and options*. Menlo Park, CA: Stanford Research Institute, Educational Policy Research Center, 1975.

Leslie, David W. Variables in faculty perceptions of the legislation of decision making. Pennsylvania: Penn State University, Center Study of Higher Education, November 1973. 54 pp.

Leslie, L. L. Financing postsecondary education through studying windfall profit. Community College Review, 1975, 2(4), 14-34.

Leslie, L. L. Higher education tax allowances. Journal of Higher Education, 1976, 67(5), 497-522.

Leslie, L. L., & Creasy, James. The higher education faculty of Pennsylvania: Selected characteristics. (Report No. 24) University Park, PA: Penn State University, Center for the Study of Higher Education, July 1974. 28 pp.

Levitt, R., & Sanderson, W. A select analysis of 1975-76 costs relating to the University of Nebraska, Lincoln, and other big eight universities. Lincoln: University of Nebraska--Lincoln, December 1975.

Lipow, Anne Grodzins. Library services to the graduate community, U.C.B. College and Research Libraries, 1976, 37(3), 252-255.

Lockwood, Geoffrey. Planning in a university. Higher Education, 1972, 1(4), 409-434.

Lombardi, John. Managing finances in community colleges. San Francisco: Jossey-Bass, 1973.

Lombardi, John. Meeting the financial crisis: New directions for community colleges. San Francisco: Jossey-Bass, Inc., 1973 (No. 2). Study was sponsored by Arthur M. Cohen.

*Lovejoy, Clarence E. Lovejoy's college guide. New York: Simon & Schuster, 1974.

Lunneborg, Clifford E., Dickinson, Call M., & Lunneborg, Patricia. Operationalizing institutional goals through college admissions policy. College and University, 1977, 52(3), 326-331.

Lunney, Gerald H. About that data base that is hiding in the closet. Paper presented at the Southern Association for Institutions Research Annual Conference, October 25, 1979.

*Lupton, Andrew H. et al. The financial state of higher education. Change, 1976, 8(8), 21-35.

Lynch, Beverly P. The changing environment of academic libraries. College and Research Libraries, 1978, 39(1), 10-14.

" M "

Machlup, Fritz. Our libraries: Can we measure their holdings and acquisitions? *AAUP Bulletin*, 1976, *62*(3).

Magarrell, J. Governors pushing austere budgets. *Chronicle of Higher Education*, February 9, 1976, 1.

Magarrell, J. Politics, not formulas, now cutting budgets. *Chronicle of Higher Education*, September 22, 1975, 1.

Magarrel, J. State support rises with costs and enrollment. *Chronicle of Higher Education*, November 10, 1975, 1.

Magarrel, J. State University income. *Chronicle of Higher Education*, October 6, 1975, 6.

Mahan, G. H. Special provisions for handicapped students in colleges. *Exceptional Children*, 1974, *41*(1), 51-53.

Malkiel, B., & Malkiel, J. Male-female pay differentials in professional employment. *American Economic Review*, 1973, *63*(4), 693-705.

Mallan, J. P. Current proposals for federal aid to higher education: Some political implications. In M. D. Orwid (Ed.). *Financing higher education: Alternatives for the federal government*. Illinois: American College Testing Program, 1971.

Mann, Dale. Education policy in the Carter administration. *Phi Delta Kappan*, 1977, *59*(1), 27-30; 65.

Maryland Council for Higher Education. *Tenth annual report and recommendations of the Maryland Council for Higher Education presented to his excellency, the governor and the general assembly of the state of Maryland*. Annapolis: Maryland Council for Higher Education, 1974. 84 pp.

Maryland State Board for Community Colleges. *Statewide plan for delivery of programs and services to handicapped students in Maryland community colleges*. Annapolis: Maryland State Board for Community Colleges, February 1979.

Maryland State Board for Higher Education. *Summary of the fifth annual desegregation status report for public postsecondary education institutions in the state of Maryland*. Annapolis: Maryland State Board for Higher Education, February 1979, 41.

Mason, Thomas R. *Assessing computer based systems models: New directions for institutional research*. San Francisco: Jossey-Bass. Inc. (No. 9), Spring 1976. Study sponsored by the Association for Institutional Research.

Mason, W. S., & Nelson, C. E. A comparison of data bases describing federal funding of education R & D. *Education Researcher*, 1977, *6*(11), 12-16.

Massachusetts Institute of Technology. Report of the director of libraries. Massachusetts: MIT, 1978-79.

Matheson, Maureen (Ed.). *The college handbook 1979-80*. College Entrance Exam Board, 1979.

Mathews, John. The states move in on student aid. *Compact*, 1974, *8*(3), 23-26.

Mayhew, Lewis B. *The Carnegie Commission on Higher Education*. San Francisco: Jossey-Bass Publishers, 1973, 1974. Study was sponsored by the Carnegie Commission on Higher Education.

Mayhew, Lewis B. *Higher education for occupations*. Atlanta, GA: Southern Regional Education Board Monograph No. 20, 1974.

Mayhew, L. B. *Legacy of the Seventies*. San Francisco: Jossey-Bass, Publishers, 1977.

McConnell, T. R. Campus governance--faculty participation. *The Research Reporter*, 1970, *5*(1).

McCoy, Marilyn. *A federal postsecondary education data core: An executive summary*. Preliminary draft. Boulder, CO: NCHEMS with support from National Center for Education Statistics, March 1978.

McCoy, Marilyn. The utility of HEGIS finance data. A researcher's perspective. Issue paper for the Joint Study Group on the Utility of HEGIS Finance Data for Institutional and Higher Education Sector Comparisons. Washington, DC: American Council on Education, National Association of College and University Business Officers, National Center for Education Statistics, May 1980.

*McCoy, M., & Halstead, D. (Eds.). *Higher education financing in the fifty states. Interstate comparison, fiscal year 1976*. Study by NCHEMS. Washington, DC: U.S. Government Printing Office, 1979.

McCoy, Marilyn, & Halstead, D. Kent. Important data cautions. Excerpted from *Higher education financing in the fifty states: Interstate comparisons, FY 1976, review edition.* Washington, DC: National Institute of Education, September 1979.

McGuffey, C. W. *Preparatory and career development programs for educational faculty specialists*. Washington, DC: Council of Educational Faculty Planners Institute, 1977.

McGuire, Gary. Emerging trends in state support. *New Directions for Community Colleges*, 1978, *6*(22), 15-26.

McKinney, T. Harry. Establishment of state postsecondary education commissions. *Higher Education in the States*, 1974, *4*(7), 185-204.

McLaughlin, Gerald W. Data bases at a state institution--costs, uses, and needs. Paper presented at the Eighteenth Annual Forum, Association for Institutional Research, Houston, May 1978.

McNamee, G. C., Gibson, E. J., & Bullard, G. S. *Dormitory authority of the state of New York*. Albany, NY: First Albany Corp., November 1975.

McNamee, G. C., Gibson, E. J., & Bullard, G. S. *Dormitory authority of the state of New York*. Albany, NY: First Albany Corp., April 1978.

Medsker, Leland L. *Breaking the access barriers: A profile of two-year colleges*. New York: McGraw-Hill, 1971.

Mertins, Paul F., & Brandt, Norman J. *Financial statistics of institutions of higher education, fiscal year 1976, state data*. Washington, DC: U.S. Government Printing Office, DHEW, 1978.

Meyers, R. S. Desert dictates campus design. *American School and University*, 1973, *45*(12), 15-17.

Micek, S. S., Service, A. L., & Lee, Y. S. *Outcome measures and procedures manual field review edition. Technical Report No. 70*. Boulder, CO: NCHEMS at WICHE, May 1975.

Middleditch, Leigh B., Jr. College and university fringe benefits. *Journal of College and University Law*, 1973-74, *1*(2), 172-189.

Millard, Richard M. The states and private higher education. *Higher Education in the States*, 1975, *5*(1), 1-24.

Millett, John D. *New structures of campus power*. San Francisco: Jossey-Bass, Inc., 1978.

Millett, J. D. What is economic health? *Change*, September 1976, *8*(8), 27.

Mincer, J. Education, experience, and the distribution of earnings and employment: An overview. In F. J. Juster (Ed.). *Education, income and human behavior*. New York: McGraw-Hill, 1975.

Mingle, James R. *Degree output in the south, distribution by sex.* Atlanta, GA: Southern Regional Education Board, 1974-75. Study was sponsored by SREB.

Mingle, James R. *Degree output in the south 1975-76: Distribution by race.* Atlanta, GA: Southern Regional Education Board, 1978. Study was sponsored by SREB.

Mingle, James R. *Fact book on higher education in the south, 1977 & 1978.* Atlanta, GA: Southern Regional Education Board, 1978. 80 pp.

Mingle, James R. *More than survival: Prospects for higher education in a period of uncertainty.* San Francisco: Jossey-Bass, Inc., 1975. Study was sponsored by the Carnegie Foundation for the Advancement of Teaching.

Minnesota Higher Education Coordinating Commission. *The Minnesota library survey--a comprehensive statewide study of information needs, resources and services.* Minnesota: Higher Education Coordinating Commission, 1969.

Minorities and postsecondary education. *Integrated Education*, 1973, *11*(1), 58-64.

Minter Associates. *Financial position and progress of independent colleges and universities in Minnesota.* Boulder, CO: John Minter Associates, November 1978.

Minter Associates. *Financial position and progress of independent colleges and universities in Pennsylvania.* Boulder, CO: John Minter Associates, September 1978.

*Minter, W. J. Survey of opinion regarding selected indicators of financial condition for independent colleges and universities. A questionnaire. Los Angeles: Association of Inddpendent California Colleges and Universities, Research Foundation, 1974.

*Minter, W. J., & Bowen, H. R. *Independent higher education: Fourth annual report on financial and educational trends in independent sector of American higher education.* Washington, DC: National Association of Independent Colleges and Universities, July 1978.

Minter, W. J., & Conger, C. A. Comparing institutional reports of HEGIS financial data with AICPA-NACUBO standards--Part I. NACUBO Business Officer, March 1979; Part II, April 1979; Part III, May 1979.

Minter, W. J. *California independent colleges and universities: Current fund revenue and expenditures analysis.* Sacramento: California Postsecondary Education Commission, 1977.

Minter, W. J. Financial statistics, fiscal year 1974-1976. Harrisburg: Pennsylvania Independent Colleges and Universities, 1977.

Minter, W. J. Institutional financial statistics, 1975, 1976, 1977. Springfield: Federation of Independent Illinois Colleges and Universities.

Minter, W. J. Institutional financial statistics, 1976, 1977. Lexington: Council of Independent Kentucky Colleges and Universities.

Minter, W. J., & Bowen, H. R. Independent higher education: Third annual report on financial and educational trends in the independent sector of American Higher Education. Washington, DC: National Association of Independent Colleges and Universities.

*Minter, W. J. Current economic trends in American higher education. Change, February 1979, 11(1), 19-25.

Misic, Donald. Capital funding of Illinois Junior Colleges. Community College Frontier, 1973, 2(1), 42-44.

Mississippi State Postsecondary Education Planning Board. Inventory of postsecondary education programs in Mississippi--1974. Jackson: Mississippi State Postsecondary Education Planning Board, July 1975. 38 pp.

Mitchell, Horace. The black experience in higher education. Counseling Psychologist, 1970, 2(1), 30-36.

Mollenhauer, Emery C. Observations on off-campus credit courses and programs. Philadelphia: LaSalle College, 1978.

Monroe, Charles R. Profile of the community college: A handbook. San Francisco: Jossey-Bass, Inc., 1972.

*Mood, Alexander M. The future of higher education: Some speculations and suggestions. New York: McGraw-Hill, 1973. A report prepared for the Carnegie Commission on Higher Education.

Mood, Alexander et al. Papers on efficiency in the management of higher education. New York: McGraw-Hill, 1972. Sponsored by the Carnegie Commission on Higher Education.

Moses, S. The learning force: A more comprehensive framework for educational policy. Syracuse, NY: Syracuse University Occasional Papers in Continuing Education, No. 25, October 1975.

Moss, C. E., & Gaither, G. H. Formula budgeting: Requiem or renaissance? Journal of Higher Education, 1976, 67(5), 543-563.

Munsterman, Richard E. Collective bargaining in higher education. Michigan: West Michigan University, 1977. 20 pp.

Mushkin, S. J. (Ed.). Recurrent education. Washington, DC: USDHEW, National Institute of Education, March 1973, 347; GPO 1780-01227.

" N "

Nagle, Brian N. Leasing out facilities can cut costs. *American School and University*, 1976, *48*(12), 22-23.

National Academy of Sciences. *Doctoral scientists and engineers in the United States: 1973 profile*. Series; also, *1975 profile*. Support from the National Science Foundation, Division of Science Resources Studies. Washington, DC: National Academy of Sciences, March 1974; January 1977.

*National Advisory Committee on Black Higher Education and Black Colleges and Universities. *Higher education equity: The crisis of appearance versus reality*. First annual report, 1971. June 1978. Second annual report, 1978. June 1979. Washington, DC: Office of Education.

National Advisory Committee on Black Higher Education and Black Colleges and Universities. *Access of black Americans to higher education: How open is the door?* Washington, DC: U.S. Government Printing Office, January 1979.

National Advisory Council on Extension and Continuing Education. *A question of stewardship, a study of the federal role in higher continuing education*. Sixth annual report and recommendations. Washington, DC: National Advisory Council on Extension and Continuing Education, 1972.

National Association of College and University Business Officers, Washington, DC:

College and university business administration. 3rd. ed. 1974.

A college planning cycle, people, resources, process: A practical guide. 1975.

Conference for women administrators: Financial management of colleges and universities. 1977.

Results of the 1977 NACUBO comparative performance study and investment questionnaire. 1977. See also, . . . 1974, 1975.

National Association of College and University Business Officers, NACUBO Studies in Management:

A system of reporting and accounting. 1976.

The university treasurer's report can make sense without abandoning fund accounting or stewardship. 1973, *2*, 9. W. H. Wilkinson, author.

Financial reporting by colleges and universities in 1971. 1974, *3*(9). H. Sherer, author.

National Association of College and University Business Officers, *Business Officer*:

The bottom line in college and university finance. Hans Jenny, author. February 1979.

NACUBO Professional File:

Accounting principles and financial statements. May 1973, *4*(3). D. D. Robinson, author.

Inflation in the higher education industry. January 1975, *6*(1).

Analysis and interpretation of financial data. June 1975, *7*(3). D. D. Robinson, author.

Cost behavior analysis for planning in higher education. 1977, *9*(5), 1-63. D. D. Robinson, W. R. Howard, & F. J. Turk, authors.

National Association of State Universities and Land Grant Colleges, Washington, DC:

Historically black colleges: A fact book. March 1974.

Student charges, 1968-69 through 1977-78, at state and land grant universities. Annual.

National Board on Graduate Education. *Minority group participation in graduate education*. Washington, DC: National Academy of Sciences, June 1976.

National Center for Education Statistics, U.S.D.H.E.W., Washington, DC:

Adult basic and secondary program statistics, 1975; Students and staff data--July 1, 1974-June 30, 1975 and selected summaries of fiscal years 1971-75.

Annual evaluation report on programs administered by the U.S. Office of Education, fiscal year 1977. Office of Education, Office of Planning, Budgeting, and Evaluation.

Associate degrees and other formal awards below the baccalaureate, 1975-76 and 1976-77. 1979.

Bachelor's degrees awarded to women.

Basic student charges 1972-73; 1973-74; 1974-75.

College and universities offering accredited programs by accreditation field, including selected characteristics, 1977-78.

A comparison of women's faculty salaries and earned degrees.

The condition of education for Hispanic Americans. 1980. G. H. Brown, N. L. Rosen, S. T. Hill & M. A. Olivas, authors.

The condition of education, part 2, 1980 edition: NCES programs and plans. 1980. I. Garfield, author.

The condition of education, 1980 edition. 1980. N. B. Dearman & V. W. Plisko, authors.

Consolidated program information report, 1971. 1975.

Degree awards to women: An update. 1979. G. H. Brown, author.

*Digest of education statistics. Annual.

Directory of postsecondary schools with occupational programs, 1975-76. 1978. E. R. Kay, author. Also 1975-76 edition; 1971 edition; and 1978 edition.

*Earned degrees conferred: Analysis of trends. 1965-66 through 1977-78. Part A: Summary Data; Part B: Institutional Data.

*Educational technology--a handbook of standard terminology and a guide for recording and reporting information about education technology.

*Education directory: Colleges and universities. 1976-76; 1976-77; 1977-78; 1978-79.

Education in the United States: Statistical highlights through 1977-78. 1979. L. Eiden & W. V. Grant, authors.

Education in U.S.: A brief overview. Office of Education, 1977.

The education professions 1971-72: Part I--The need for teachers in our schools and collges.

The education professions 1971-72: Part IV--A manpower survey of the school library media field.

Evaluation overview: Postsecondary division, FY 74. Office of Planning, Budgeting, and Evaluation. Unpublished paper.

*Experimental project on financial health indicators using HEGIS data. 1979.

Facilities inventory and classification manual 1973. National Center for Education Statistics/WICHE, 1974. L. C. Romney, author.

Fall enrollment in higher education. 1973; 1976; 1977; 1978. G. Wade, author.

Federal agencies and black colleges. Fiscal year 1978. Federal Interagency Committee on Education, 1979.

Federal policy issues and data needs in postsecondary education. Final report. 1975. P. Christoffel & L. Rice, authors.

Federal postsecondary education data core. Draft Copy. National Center for Higher Education Management Systems for National Center for Education Statistics, June 1979.

Final report of postsecondary education seminars of 1976. Sponsored by Mariscal & Co./National Center for Education Statistics.

Financial statistics of institutions of higher education: Property 1969-1970. National Center for Education Statistics, 1974.

HEGIS fall enrollment survey 1980: State comments. Boulder, CO: SHEEO/NCES Communication Netowrk, May 1980. J. Ryland, author.

HEGIS: Financial statistics of institutions of higher education: Current funds, revenues and expenditures. Annual reports.

HEGIS IX requirements and specifications for the inventory of college and university physical facilities--1974. L. Barker, C. Novalis, J. Vignone, authors.

HEGIS IX requirements and specifications for the survey of degrees and other formal awards conferred between July 1, 1973 and June 30, 1974. L. Barker & J. Vignone, authors. Sponsored by the National Center for Education Statistics.

HEGIS IX requirements and specifications for the survey of institutional characteristics of colleges and universities, 1974-75. National Center for Education Statistics, 1975.

HEGIS IX requirements and specifications: Opening fall enrollment in higher education. 1974. J. Vignone, author.

HEGIS XIII, 1978-1979: Requirements and specifications manual. Vol. 1. A. Podolsky, author.

HEGIS preference survey. Boulder, CO: State Higher Education Executive Officers. Sponsored by the National Center for Education Statistics, January 1978, revised July 1978. J. Ryland, author.

Higher education finance manual--1975. National Center for Education.

Higher education prices and price indexes: 1977 supplement, 1978 supplement. Washington, DC. D. K. Halstead, author.

The impact of non-traditional students. 1978. W. H. Turner & J. A. Michael, authors.

The impact of Section 504 of the Rehabilitation Act of 1973 on American colleges and universities. National Center for Education Statistics, 1979. R. Wulfsberg, author.

Increase in adult and continuing education activites in colleges and universities.

Institutions of higher education. Index by state and congressional district, 1979. 1979. C. R. Smith, author.

Inventory of physical facilities in institutions of higher education: Fall 1971. National Center for Education Statistics, 1973.

Inventory of physical facilities in institutions of higher education: Fall 1974. National Center for Education Statistics, 1977.

Issues in postsecondary education: Financial viability of institutions.

Issues is postsecondary education: The impact of non-traditional students. 1978. R. M. J. Kyle, author.

Issues in postsecondary education: Personal challenges. National Center for Education Statistics, 1978. J. E. Rossman, author.

Library statistics of colleges and universities, fall 1971. Analytic report (Part C). S. Smith, author.

Library survey of college and university libraries, fall 1976. Preliminary report.

Manual for budgeting and accounting for manpower resources in postsecondary education. National Center for Education Statistics, 1975. D. P. Jones & T. H. Drews, authors.

Master degrees awarded to women. 1978. G. H. Brown, author.

Migration of college students. Preliminary analysis of trends in college student migration. National Center for Education Statistics. R. J. Petersen & C. R. Smith, authors.

NCES fast response survey: Availability of evening and weekend baccalaureate degree-credit courses, state comments. Boulder, CO: SHEO/NCES Communication Network, May 1980. J. Ryland, author.

Noncredit activities in institutions of higher education, 1967-68. Professional and Refresher Courses. National Center for Education Statistics, 1973. F. Kemp & J. E. Weldon, authors.

Noncredit activities in institutions of higher education for the year ending June 30, 1976. 1978. F. Kemp, author.

Obligations to institutions of higher education and other non-profit organizations: Fiscal year 1974 (summary). Office of Education, Vol, I.

Opening fall enrollment in higher education, 1959: Analytic report. 1960. E. M. Huddleston, author.

Opening fall enrollment in higher education: Part A--summary data, 1968. 1969. M. O. Chandler, author.

Participation in adult education: Final report, 1975. 1978. R. Boaz, author. Final report, 1972. 1976. I. E. Okes, author.

Part-time financial aid counselors in institutions of higher education, 1977.

Postsecondary education core design project: Recommendations for data collection activities and policy considerations: Final report. Spetember 1978. Lawrence Johnson & Associates, Inc.

Programs for educational equity: Schools and affirmative action. Office of Education, 1975. Sponsored by NIE.

Projections of educational statistics. Volumes in a series: to 1980-81 (1972) and to 1981-82 (1973).

Racial and ethnic enrollment data from institutions of higher education, fall 1974, 1972, and 1970 reports. Office of Civil Rights.

Racial, ethnic and sex enrollment data from institutions of higher education, fall 1976.

Report of the eleventh annual conference on the higher education general information survey (HEGIS), June 2-4, 1975. National Center for Education Statistics.

Residence and migration of college students, fall 1968: Analytic report. 1970. G. H. Wade, author.

Schools for careers: An analysis of occupational courses offered by secondary and postsecondary school, 1971. 1975. R. Calvert, Jr., E. R. Kay, & N. A. Osso, authors.

Selected statistics on the salaries, tenure, and fringe benefits of full time instructional faculty for the 1978-79 academic year.

Seventh annual conference on higher education general information survey (HEGIS). National Center for Education Statistics, WICHE & ACE, sponsors. National Center for Education Statistics, June 21-25, 1971.

Social indicators of equality for minorities and women. Commission of Civil Rights, August 1978.

State use of HEGIS faculty salary and fringe benefits data. Boulder, CO: State Higher Education Executive Officers. Sponsored by the National Center for Education Statistics, November, 1978. J. Ryland, author.

Statewide planning in higher education. 1974. D. K. Halstead, author.

Statistics of trends in education, 1966-67 to 1986-87.

Student/pupil accounting. Standard terminology and guide for managing student data in elementary and secondary schools, community/junior colleges, and adult education. National Center for Education Statistics, 1974. J. F. Putnam, author.

Students enrolled for advanced degrees, summary data, fall 1975.

Students enrolled for advanced degrees, fall 1968: Summary data. 1970. M. O. Chandler, author.

Survey of characteristics of students in noncollegiate postsecondary schools, 1977.

Survey of federal libraries, fiscal year 1972. 1975.

Tables of salaries and tenure of full-time instructional faculty 1974-75. National Center for Education Statistics, January 1975. 8 pp.

Tax wealth in fifty states. 1978. D. K. Halstead, author.

Toward equal opportunity: Affirmative admissions programs at law and medical schools. Commission on Civil Rights, June 1978.

Transfer students in institutions of higher education. National Longitudinal Study.

Trend analysis of associate degrees.

Upper division enrollment by degree field, 1975 summary data.

Women in vocational education.

Women's representation among recipients of doctor's and first-professional degrees, 1970-71 through 1974-75. National Center for Education Statistics.

*National Center for Higher Education Management, Boulder, CO:

An approach to cost studies in small colleges. 1978. G. Gamso, author.

Assessing financial distress in colleges and universities. September 1979. D. J. Collier, author.

Facilities inventory & classification manual. 1973. L. C. Romney, author.

Financing postsecondary education in the United States. 1973.

A forecast of changes in postsecondary education. 1972. V. E. Huckfeldt, author.

Full disclosure: New and responsible attitudes. 1972. J. E. Arnold, author.

HEGIS financial reporting guide: 1980 edition. 1980. R. H. Allen, author.

Higher education facilities inventory and classification manual. Final review edition, 1972. L. C. Romney, author.

Higher education finance manual: The source/use concept (Vol. 3). 1980. R. H. Allen, & D. J. Collier, authors.

Information exchange procedures data formats and definitions. Technical report No. 64. February 1975.

An introduction to the identification and uses of higher education outcome information. 1973. S. S. Micek & R. A. Wallhaus, authors.

Measures of institutional goal achievement. 1978. L. C. Romney, author.

NCHEMS costing and data management system personnel data module reference manual. Technical report No. 59. August 1970. M. Haight & R. Martin, authors.

NCHEMS costing and data management system student outcomes module reference manual. Technical report No. 61.

Program classification structure. June 1972. A NCHEMS/WICHE project.

A reference guide to postsecondary education data sources: A directory to data sources corresponding to items in the NCHEMS statewide measures inventory, 1975.

Statewide planning for postsecondary education: Issues and designs. 1971. L. Glenny & G. Weathersby, authors.

A validity check on the HEGIS finance data. January 1979. C. Patrick & D. J. Collier, authors.

*National Commission on Financing Postsecondary Education. Financing postsecondary education in the United States. Washington, DC: U.S. Government Printing Office, 1973.

National Committee on Standard Reports for Institutions of Higher Education. Financial reports for colleges and universities. Chicago, IL: University of Chicago Press, 1935.

National Institute of Education. Finance, productivity, and management in postsecondary education. Washington, DC: U.S. Government Printing Office, 1978.

National Research Council. Summary report 1970: Doctorate recipients from United States universities. Support from the National Science Foundation, Division of Science Resource Studies. Washington, DC: National Research Council, August 1971. Series: 1971 (April 1972); 1973 (May 1974); 1974 (June 1975); 1975 (May 1976); 1976 (March 1977); 1977 (February 1978).

National Science Foundation, Washington, DC:

Federal funds for research, development and other scientific activities, fiscal years 1971, 1972, and 1973. U.S. Government Printing Office, 1973.

Federal support to universities, colleges and selected nonprofit institutions. Fiscal year 1972. 1974.

Graduate science enrollment in 1974 shows first increase since 1969. Division of Science Resource Studies, October 1975.

National patterns of R & D resources: Funds and personnel in the United States, 1953-1978-79. October 1978.

A price index for deflation of academic R & D expenditures. NSF 72-310. U.S. Government Printing Office, 1972.

Recent trends in enrollment and manpower resources in graduate science education. May 1971.

A report to the president and congress. *Federal support to universities, colleges, and selected nonprofit institutions, fiscal year 1977.*

Nelson, James E. Student aid at the two-year college: Who gets the money? *Community and Junior College Journal*, 1976, *47*(2), 12-13; 15; 17.

Nelson, Susan C. *Community colleges and their share of student financial assistance.* New York: College Entrance Examination Board, 1980.

State of New Jersey Commission on Financing Postsecondary Education. *Financing in an era of uncertainty.* Trenton, NJ: Commission on Financing of Postsecondary Education, March 1977.

New Jersey Department of Higher Education. *The colleges and universities of New Jersey.* New Jersey: Department of Higher Education, June 1975, 1-79.

Newman, Frank et al. *Report on higher Education.* Washington, DC: USDHEW, Report No. OE-50065, 1971.

**New York Times*--Sample Articles:

Status of women, June 4, 1978.

Enrollment of blacks, June 11, 1978.

Private sector of higher education, July 27, 1978.

Enrollment in women's colleges, November 19, 1978.

Non-public higher education in Illinois: A report for master planning, phase IV. Springfield, IL: Illinois Board of Higher Education, August 1975.

Nunemaker, G. R. *Financial statistics of institutions of higher education in Pennsylvania for fiscal year ending 1975*. Pennsylvania: Pennsylvania Department of Education, 1976.

Nunemaker, George R. *Upperdivision undergraduate and postbaccalaureate enrollment at Pennsylvania's institutions of higher education, fall 1975*. Pennsylvania: State Department of Education, Bureau of Information Systems. (Our Colleges and Universities Today, Vol. XII, No. 3). 46 pp.

" O "

Office of Admissions and Financial Aid Affairs. 1975 manual of freshmen profiles. Washington, DC: Office of Admissions and Financial Aid Affairs, SUNY, 1975, 1-116.

Oklahoma State Regents for Higher Education. College and university salaries in ten midwestern states: 1977-78 academic year. Oklahoma City, OK: Oklahoma State Regents for Higher Education, 1978.

Oklahoma State Regents for Higher Education. Faculty salaries in the Oklahoma State system of higher education: 1977-78. Oklahoma City, OK: Oklahoma State Regents for Higher Education, 1978.

*Olivas, M. (Ed.). The dilemma of access, minorities in two year colleges. Washington, DC: Howard University Press, 1979.

O'Neill, June. Resource use in higher education: Trends in output and inputs, 1930 to 1967. Berkeley, CA: Carnegie Commission on Higher Education, 197.

O'Neill, June A. Sources of funds to colleges and universities. New York: McGraw-Hill, 1973. Sponsored by the Carnegie Commission on Higher Education.

Orwig, M. D. et al. Financing higher education: Alternatives to the federal government. Illinois: American College Testing Program, 1971.

Owens, R. E., & Cashin, W. E. Preparing examinations: A practical guide for idea users. Kansas: Kansas State University Center for Faculty Development, 1977.

"P"

*Pace, C. Robert. *The demise of diversity?* New York: McGraw-Hill, April 1974. A comparative profile of eight types of institutions. A technical report sponsored by the Carnegie Commission on Higher Education.

Packer, Herbert L. Piling higher and deeper: The shame of the Ph.D. *Change*, 1970, *2*(6), 49-53.

Parker, Garland G. *College and universities enrollments in the U.S.* Illinois: American College Testing Program, 1973.

Parker, Garland G. *College enrollments in the U.S., 1977-78*. Illinois: American College Testing Program, 1978. 92 pp.

Parker, Paul W., & Parker, Patrick W. *Kansas Community Colleges: Assessing staff development*. ERIC Document Reproduction Service, ED 167 211, 1978, 1-18.

Patrick, Cathleen, & Collier, Douglas J. A validity check on the HEGIS finance data. Boulder, CO: NCHEMS, January 1979.

Pennsylvania Department of Education. *Pennsylvania higher education enrollment planning projections: Phase II report.* Pennsylvania: Pennsylvania Department of Education, 1975.

Peterson, John C., & Halasz, Bina. *Information resources for education*. ERIC Clearinghouse on Career Education, 1977.

Peterson, Ray, & Peterson, J. Southern white institutions and black students: A new partnership. *Educational Record*, 1974, *55*, 13-22.

Pfnister, Allan O. *Planning for higher education: Background and application*. New York: Westview Press, 1976.

Phair, Tom S. *Full-time faculty and staff hired, 1975-1976* California: California Educational Placement Association, February 1[illegible]76. 6 pp.

Pile, P. K., & Smith, S. C. (Eds.). *Directory of organization and personnel in educational management*. ERIC Document Reproduction Service, ED 058 469, December 1971, 1-71.

Ploch, Donald R. *Higher education: Faculty as change agents*. Washington, DC: Department of HEW, Office of Education, June 1972. 55 pp.

Powel, J. H., & Lamson, R. D. An annotated bibliography of literature relating to the costs and benefits of graduate education. Support from the National Science Foundation, Division of Science Resources Studies. Washington, DC: The Council of Graduate Schools, March 1972.

Powel, J. H., Jr., & Lamson, R. D. Elements related to the determination of costs and benefits of graduate education. Support from the National Science Foundation, Division of Science Resources Studies. Washington, ED: The Council of Graduate Schools, March 1972.

Private organizations and associations: Information resources for education. Arlington, VA: Consortium of Associations for Educational Dissemination, August 1978.

" R "

Radner, Roy, & Kuh, Charlotte V. *Market conditions and tenure in U.S. higher education: 1955-1973*. Technical report No. 2. Berkeley, CA: Carnegie Council on Policy Studies in Higher Education, July 1977. 61 pp.

Recent research on private higher education: A compilation. Policy Analysis Service Reports, Vol. 2, No. 2, August 1976. Washington, DC: American Council on Education, 1976. Sponsored by the American Council on Education.

Regents Advisory Commission on the Financial Problems of Postsecondary Institutions. *Report on the regents advisory commission on the financial problems of postsecondary institutions*. Albany: State Education Department, September 1975.

Regents of the State University of New York. Minorities and postsecondary education. *Integrated Education*, 1973, *11*(1), 58-64.

Renford, Beverly L. *Library resources: A self-paced workbook*. University Park: Penn State University, University Libraries, March 1978.

Report on higher education: The federal role, data and decision making in postsecondary education. Washington, DC: Special Task Force to the Secretary of HEW, March 1973.

Roark, Anne C. Washington's "Most Effective" lobbyist for higher education. *The Chronicle of Higher Education*, October 6, 1980, p. 3.

*Roberts, J. (Ed.). *Catalogue of selected machine-readable data bases for postsecondary education*. Washington, DC: National Education Data Library, November 1975.

Roberts, S. *Sex discrimination in academia--can the courts provide an answer?* Paper presented at the Annual Meeting of American Psychological Association, New Orleans, LA, August 1974.

Robinson, D. D. Accounting principles and financial statements. *NACUBO Professional File*, May 1973, *4*(3).

Robinson, D. D. Analysis and interpretation of financial data. *NACUBO Professional File*, June 1975, *7*(3).

Robinson, D. D., Howard, W. R., & Turk, F. J. Cost behavior analysis for planning in higher education. *NACUBO Professional File*, 1977,

Rosen, S. Measuring the obsolescence of knowledge. In F. T. Juster, (Ed.). *Education, income, and human behavior*. New York: McGraw-Hill, 1975.

Rosenthal, E. L. Lifelong learning--for some of the people. Change, 1977, 9(8), 44-45.

Ross, M. G. The anatomy of academe: The university. New York: McGraw-Hill, 1976.

Ross, W. O. The dome of many-colored glass. Library College Journal, 1970, 3(2), 45-51.

*Rossi, A. S., & Calderwood, A. Academic women on the move. New York: Russell Sage Foundation, 1973.

Rusk, J. J., & Leslie, L. L. The setting of tuition in public higher education. Journal of Higher Education, 1978, 49(6), 531-547.

Russel, J. E. The admissions officer: New challenges and responsibilities. College and University, 1978, 53(3), 291-296.

Russell, J. D. The finance of higher education. Chicago: The University of Chicago Press, 1944.

Ryan, J. W. Degree designations at U.S. graduate schools. Washington, DC: Council of Graduate Schools in the U.S., September 1977.

" S "

St. John, E. P., Tingley, T., & Gallos, J. Appendix C, descriptive analysis of institutional change using HEGIS, CFAE, OCR, and Title III data bases. In George Weathersby et al. Final report: The development of institutions of higher education: Theory and assessment of impact of four possible areas of federal intervention. Cambridge: Harvard School of Education, 1977.

Salley, Charles D. Georgia State University spending patterns and Atlanta economy. Georgia: Georgia State University, Office in Inst. Planning, December 1976. 36 pp.

Sanford, Terry. The role of formal education. Journal of Medical Education, 1975, 59(1), 3-10.

Schier, Richard F. The problem of lumpenprofessoriat. AAUP Bulletin, 1970, 56(4), 361-365.

Schmidtlein, Frank A. State budgeting for higher education. Berkeley, CA: Berkeley Center of Research and Development in Higher Education, 1977, 290.

Schroeder, R. G. A study of cost analysis in higher education: Site visit descriptions of costing systems and their use in higher education. Vol. 3. Washington, DC: American Council on Education, 1978.

Schultze, Charles, Fried, Edward R., Rivlin, Alice, & Teeters, Nancy. Setting priorities for the 1973 budget. Washington, DC: The Brookings Institution, 1972. Study was sponsored by the Brookings Institution.

Science Resources Studies Highlights. First year graduate science enrollment continues to decline. Washington, DC: National Science Foundation, May 25, 1975.

Science Resources Studies Highlights. Graduate science enrollment declines 2 percent from 1971-1972. Washington, DC: National Science Foundation, August 16, 1972.

The second Newman report: National policy and higher education. Report of a special task force to the Secretary of HEW. Cambridge: The MIT Press, 1973.

Selected bibliography, the academic workforce: Opportunities for professional renewal. Compiled from Resources in Education. Washington, DC: ERIC Clearinghouse on Higher Education.

Sharples, Edward. Graduate programs and the eighties. ADE Bulletin, 1978, 59, 13-19.

Shear, George. Alternative architecture. College and University Business, 1973, 54(1), 27-34.

Sheldon, M. S. et al. Organization for direction and coordination of occupational education, final report. ERIC Document Reproduction Service, ED 132 995, 1976, 1-98.

Sherer, Harvey. Financial reporting by colleges and universities in 1971. NACUBO studies in management. National Association of College and Business Officers, 1974, 3(9).

Shulman, Carol H. Private colleges. Present conditions and future prospects. Washington, DC: American Association of Higher Education, 1974.

Simon, B., & Ellison, P. Does college make a person healthy, wealthy, and wise? In L. Solmon and P. Taugman (Eds.). Does college matter? New York: Academic Press, 1973.

Simpson, Carl et al. A dropout is a dropout is a dropout. Berkeley, CA: California University, 1977, 1-39.

Smith, Carolyn R. Institutions of higher education: Index by state and congressional district, 1979. Washington, DC: National Center for Education Statistics, April 1979.

Smith, G. (Ed.). Georgia State University fact book, 1971-1978. Georgia: Georgia State University, Office of Institutional Planning, October, 1977.

Smith, Patricia, & Henderson, Cathy. A financial taxonomy of institutions of higher education. Washington, DC: American Council in Education, 1976. Study was sponsored by ACE.

Solmon, L., & Taubman, P. (Eds.). Does college matter? New York: Academic Press, 1973.

Solmon, Lewis C. Men and women graduate students. California: UCLA, March 1975, 1-212.

South Carolina Commission on Higher Education. Annual report of the South Carolina Commission on Higher Education. South Carolina: Commission on Higher Education, January 1975.

Southern Regional Education Board. Higher education legislative issues '79: Proceedings of SREB's 28th Legislative Work Conference, August 9-11, 1979.

Staff Report. The national commission on the financing of postsecondary education. *A framework for analyzing postsecondary education financing policies*. Washington, DC: U.S. Department of HEW, May 1974.

Staff, Robert J., & McKenzie, Richard B. *An economic theory of learning: Student sovereignty and academic freedom*, final report. Blacksburg, VA: Virginia Polytechnic Institute and State University, December 1973.

Staller, J. M. *Collective bargaining: Its effects on faculty at two-year colleges*. Washington, DC: National Center for the Study of Collective Bargaining in Higher Education, 1976. 15 pp.

Staman, E. M. *A catalogue on planning in higher education--organizations, periodicals, bibliography*. Newport News, VA: Christopher Newport College, Society for College and University Planning, January 1978.

Stanford Research Institute. *A study of user requirements for educational statistics and services. Vol. I: Summary of main findings and inferences; Vol. II: Detailed findings from the survey and interview phase; Vol. III: Appendices*. M. H. Chorness, Principal Investigator, August 1970. Study for the National Center for Education Statistics.

State Occupational Information Coordinating Committee. *Analysis of the SOICC's annual basic assistance grant modifications and program plans*. Washington, DC: National Occupational Information Coordinating Committee, April 1980.

State University of New York (SUNY)

Application and enrollment patterns of transfer students, Fall 1971. New York: SUNY, Central Staff Office of Institutional Research, May 1971.

Application and enrollment patterns of transfer students, Fall 1972. New York: SUNY, Central Staff Office of Institutional Research, 1973.

Attrition and retention of first time, full time students in two-year and baccalaureate degree programs class of 1973. New York: SUNY, Central Staff Office of Institutional Research, October 1974.

Compilation of statistical data concerning the community college of the State University of New York. New York: SUNY, 1977.

Geographic origins of students. New York: SUNY, 1975.

The regents statewide plan for the development of postsecondary education. New York: SUNY, November 1976.

Trends in enrollment and degrees granted, 1948-1974. Report No. 7-75. New York: SUNY, Central Staff Office of Institutional Research, September 1975. 137 pp.

Stauffer, T. M. A reference guide to important books for academic administrators. ERIC Document Reproduction Service, ED 121 181, 1975, 1-23.

Steahr, Thomas E. College student migration to predominantly black institutions. Review of Public Data Use, 1976, 4(3), 34-41.

Steinberg, S. The academic melting pot: Catholics and Jews in higher education. New York: McGraw-Hill, 1974. Study was sponsored by the Carnegie Foundation.

Stenner, A. Jackson. Applications of statistics to indicator development. In American Council of Education. New developments in measuring financial conditions of colleges and universities. Washington, DC: American Council on Education, 1978.

Stewart, Clifford I., & Harvey, Thomas R. Strategies for significant survival: New direction for higher education. San Francisco: Jossey-Bass, Inc., No. 12, 1975. Study was sponsored by J. B. Len Hefferlin.

Student charges at state and land grant universities, 1977-78. Washington, DC: National Association of State Universities and Land Grant Colleges, Office of Research and Colleges, 1977. 23 pp.

Suchar, Elizabeth W. et al. Student expenses at postsecondary institutions 1974-75. New York: College Entrance Examination Board, 1974. 70 pp.

Systems of higher education in Connecticut: Management information systems report. Hartford: Connecticut Board of Higher Education, 1977.

" T "

Taubman, Paul, & Wales, Terence. *Higher education and earnings*. New York: McGraw-Hill Book Co., November 1974.

Taylor, A. L. et al. *Decision processes preferred by division chairperson in a community college*. ERIC Document Reproduction Service, ED 153 689, May 1978, 1-17.

Taylor, Emily, & Shavlik, Donna. Advance women: A national identification program. *Educational Record*, 1977, *58*, 91-100.

Tennessee State Board of Regents. *The state board of regents 1975-76 annual report of the state university and community college system of Tennessee*. Nashville: Tennessee State Board of Regents, 1976.

Texas A & M University. *Higher education facilities systems building analysis, summary report*. College Station: Texas A & M University, College of Architecture & Engineering Design, July 1971.

Thomas, Charles R. *Data element dictionary: Facilities*. A technical report concerning facilities related data elements in the WICHE management information systems program. 1st edition. Boulder, CO: WICHE, April 1970.

Thomas, Stephen, & Floyd, Koy. *Critical issues in educational finance, 1975*, n.p., 1975.

Thompson, Robert K. State and institutional comparative analyses using HEGIS finance data: A review. Issue paper for the Joint Study Group on the Utility of HEGIS Finance Data for Institutional and Higher Education Sector Comparisons. Washington, DC: National Association of College and University Business Officers, American Council on Education, and National Center for Education Statistics, May 1980.

Toffler, Alvin. *Future shock*. New York: Bantam Books, 1970.

Trow, M. A. *Preliminary findings from national surveys of American higher education*. New York: McGraw-Hill, January 1971. Study was sponsored by the Carnegie Commission on the Future of Higher Education.

Trow, Martin. The embattled university: Reflections on the transition from mass to universal higher education. *Daedalus*, 1970, 1-42.

Trueheart, William E., & Weathersby, George B. Appendix G. Production function analysis in higher education: General methodology and application to four year black colleges. In Final report. The development of institutions of higher education: Theory and assessment of impact of four possible areas of federal intervention. Cambridge, Mass.: Harvard Graduate School of Education, January 1977.

*Truitt, T. D. Classifying measures of institutional financial strength. EDSTAT project working paper No. 2. New Jersey: Department of Higher Education, 1975.

Tuckman, B. H., & Tuckman, H. P. The structure of salaries at American Universities. Journal of Higher Education, 1976, 42(1), 51-64.

Turner, William H., & Michael, John A. Traditionally black institutions of higher education: Their identification and selected characteristics. Washington, DC: National Center for Education Statistics, 1978.

Tweddale, R. B. Stability of educational needs, educational appropriations, and college choice factors (as expressed on the American College Testing Program Assessment). Allendale, Michigan: Grand Valley State Colleges, Office of Institutional Analysis, June 1976.

" U "

*U.S. Congress. Senate Report No. 93-1026, education amendments of 1974. 93rd Cong., 2nd Sess. Washington, DC: U.S. Government Printing Office, 1974.

*U.S. Department of Commerce. The social and economic status of black population in the United States: An historical view, 1790-1978. Washington, DC: U.S. Department of Commerce, Bureau of Census, 1979.

U.S. Government Accounting Office. Problems and outlook of small private liberal arts colleges. Washington, DC: G.A.O., August 1978.

University of California. Campus statistics. Berkeley, CA: UCLA, March 1975, 1-9.

The University of the State of New York. Postsecondary education in New York State. Albany, NY: The New York State Education Department, January/February 1978.

The University of the State of New York. The state-aided colleges: Financial profiles: 1969-73. Albany, NY: State Education Department, March 1974.

" V "

Valley, John R. *Increasing the options*. Princeton, NJ: Educational Testing Service, Office of New Degrees Programs, 1972.

Valley, John R., & Hamilton, I. Bruce (Eds.). *Matching new needs with new resources, issues in nontraditional study* (Vol. I). Princeton, NJ: Colleges Entrance Exam Board, Educational Testing Service, Office of New Degree Programs, 1976.

Van Alstyne, C. The high cost of transfer: Hidden penalties. *Community and Junior College Journal*, 1974, *45*(2), 12-14.

*Van Alstyne, C., Withers, J. S., & Elliott, S. A. Affirmative inaction: The bottom line tells the tale. *Change*, August 1977, *9*(8), 39-41, 60.

*Van Alstyne, Carol. Response offered to *Change* article on the state of higher education. *Business Officer*. Washington, DC: National Association of Business Officers, December 1976.

Van Alstyne, Carol, & Coldren, Sharon L. *Costs to colleges and universities of implementing federally mandated social programs*. Washington, DC: American Council on Education, 1976.

Van Alstyne, Carol, & Coldren, Sharon L. *The financial measures project: Development and application of measures of financial conditions of colleges and universities*. Washington, DC: American Council on Education, 1976.

Van Dusen, W. D. A forgotten minority, the transfer student needs financial aid, too. *College Board Review*, 1974, *92*, 17-20.

Vermilye, D. W. (Ed.). *The future in the making: Current issues in higher education, 1973*. San Francisco: Jossey-Bass, 1973.

Vermilye, Dyckman W. (Ed.). *Lifelong learners--a new clientele for higher education*. San Francisco: Jossey-Bass, 1974.

Veterans' Education and Employment Assistance Act of 1976. Washington, DC: Congress: Committee on Veterans Affairs, 1975.

Vetter, B. M. More women for higher education. *Science*, 1972, *178*(4063), 815.

Vocational plans of full-time community and junior college students, fall 1970. Washington, DC: NCES/Department of HEW, Office of Education, 1975. Sponsored by NCES/DHEW.

Von Molthe, K., & Schnecvosgy, N. _Educational leaves for employees_. San Francisco: Jossey-Bass, 1977.

Vredeveld, G. M. Distributional impacts of alternative methods of financing higher education. _Journal of Higher Education_, 1978, _49_(1), 48-69.

" W "

Wallhaus, Robert A. Measuring and increasing academic productivity. San Francisco: Jossey-Bass Inc. (No. 8), 1975. Study was sponsored by the Association for Institutional Research.

Walsh, John. Faculty salaries: 1969-70 may have ended an era for academe. Science, 1970, 170(3955), 306-308.

Walther, Peter D. NLRB in higher education. Labor Law Journal, 1978, 29(4), 209.

Washington State Council on Higher Education. Follow-up study of tuition and fee comparisons and federal student financial aid rankings. Olympia, WA: State Council on Higher Education, April 1975. 41 pp.

Wattenbarger, James L., & Bender, Louis W. (Eds.). New directions for higher education--improving statewide planning. San Francisco: Jossey-Bass, 1974.

Watts, S. F. (Ed.). The college handbook. Princeton, NJ: College Extrance Exam Board, 1975.

Weathersby, George B. Large-scale data bases, standards, and exchange procedures. In M. W. Peterson (Ed.). Benefiting from inter-institutional research. New directions for institutional research. 1976, 3, 4.

Weathersby, George B. Post-secondary education. Society, 1976, 13(2), 59-66.

Weathersby, George, B., & Jackson, Gregory A. Individual demand for higher education: A review and analysis of recent empirical studies. Mimeograph. Prepared for NACUBO 1975 Assessment of Financial Health of Small Colleges Workship, Washington, DC; October 8-10, 1975.

Weathersby, George B., Jackson, Gregory A., Jacobs, Frederic, St. John, Edward P., & Tingley, Tyler. Final report. The development of institutions of higher education: Theory and assessment of impact of four possible areas of federal intervention. Cambridge, MA: Harvard School of Education, January 1977.

Weaver, W. Timoth. Educators in supply and demand. Washington, DC: Educational Research Association, April 1977, T-113.

West, E. D., & Andersen, G. J. Changing public/private ratios in higher education. Educational Record, 1970, 51(4), 347-350.

Westat, Inc. Post-survey validation of fall enrollment in institutions of higher education, degrees and other awards conferred. December, 1979.

Westbrook, F. D. *Occupations available to the community college trained*. Maryland: Maryland University, Counseling Center, 1973, 1-57.

Western Interstate Commission for Higher Education, Boulder, CO:

Data element dictionary: Facilities. A technical report concerning facilities related data elements in the WICHE management information systems program. 1st ed., April 1970. C. R. Thomas, author.

1975 affirmative action recruitment directory: Human resources in higher education. 1975. S. Adams & N. Barker, authors.

The outputs of higher education: Their identification, measurement, and evaluation. Support from NSF, Division of Science Resources Studies. July 1970.

Westwelt, Esther M. *Women's higher education: Some unanswered questions*. Racine, WI: Johnson Foundation Inc., March 1972. 62 pp.

White, A. L. *Report on the council of graduate schools--graduate record examinations board 1977-78 survey of graduate enrollment*. (Part I and II). Princeton, NJ: Graduate Record Examiantions Board and the Washington, DC Council of Graduate Schools in U.S., November 30, 1977. 18 pp.

Who killed elitism in higher education? *College and University Business*, 1970, *49*(5), 60-63; 68-70.

Wilkinson, W. H. The university treasurer's report can make sense without abandoning fund accounting or stewardship. NACUBO Studies in Management, 1973, *2*, 9. Washington, DC: National Association of College and University Business Officers.

Williamson, J. Peter. Funds for the future. Background paper. Report of the 20th Century Fund Task Force on Colleges and University Endowment Policy, 1975.

Willingham, Warren W. *The source book for higher education*. New York: College Entrance Examination Board, 1975.

Wilson, Kenneth M. *Notes on attrition*. Princeton, NJ: College Research Center, July 1971.

*Wing, Paul. Monitoring the financial status of independent institutions in New York State. Paper presented to the 1978 Working Conference Measuring Financial Condition of Colleges and Universities, Annapolis, Maryland, October 190-20, 1978.

Wirtz, Willard. *The boundless resource*. Washington, DC: New Republic Book Co., Inc., 1975.

Wisconsin University Center System. *Operating budget summary and highlights*. Madison, WI: Wisconsin University Center System, July 1976.

Wittman, Milton. Feast or famine: The future for doctoral education in social work. *Journal of Education for Social Work*, 1979, *15*(1).

Wormley, Wayne Marvin. Factors related to the ability of certain small private liberal arts colleges to cope with the new depression in higher education. Unpublished doctoral dissertation, Stanford University, Mary 1978.

Wykstra, Ronald. *Human capital formation and manpower development*. California: Free Press, n.d.

Wyman, Bruce T. *Certain strategies for prison classes*. Florida: Nova University, October 1975. 49 pp.

Wynn, R. G. *At the crossroads: A report on the financial condition of the forty-eight liberal arts colleges previously studied in "The golden years" and "The turning point*." Ann Arbor, MI: Center for the Study of Higher Education, University of Michigan, April 1974.

Wynn, R. G. *Inflation indicators in liberal arts colleges*. Ann Arbor, MI: University Microfilms, 1974.

Wynn, R. G. Inflation in the higher education industry. *NACUBO Professional File*, *6*(1). Washington, DC: National Association of Colleges and University Business Officers, January 1975.

" Z "

Zeller, B. College education for all. Todays Education, 1972, 61(3), 46-49.

APPENDIX A

PANEL MEMBERS

HEGIS

PANEL OF EXPERTS

PARTICIPANTS

Curtis Baker
Statistician
National Center for Educational Statistics
Presidential Building
400 Maryland Ave., S.W.
Washington, D.C. 20202
301/436-7865

Bob Brown
Division of Survey Techniques
Bureau of Labor Statistics
Room 2143
Washington, D.C. 20212
202/523-5922

Al Cooke
Senior Consultant
National Advisory Committee on Black Education and Black Colleges and Universities
Office of Education
1100 17th Street, N.W.
Suite 706
Washington, D.C. 20036
202/653-7558

Hugh Dawkins
Registrar
Western Maryland College
Westminster, Maryland 21157
301/876-2948

Nathan Dickmeyer
Economics and Finance Unit
American Council on Education
One Dupont Circle, N.W.
Washington, D.C. 20036
202/833-4700

Maryse Eymonerie
American Association of University Professors
1344 Pine Tree Road
McLean, Virginia 22101
703/525-5393

Virginia Fadil
Research Director
National Association of Independent Colleges and Universities
1717 Massachusetts Avenue, N.W.--Suite 503
Washington, D.C. 20036
202/387-7623

James Farmer
Chairman
Board of Systems Research
1030 15th Street, #300
Washington, D.C. 20005
202/546-1760

Jonathon Fife
George Washington University
ERIC
1 Dupont Circle--Suite 630
Washington, D.C. 20036
202/296-2597

Carol Frances
Chief
Economist and Director, Economic and Finance Unit
American Council on Education
1 Dupont Circle
Washington, D.C. 20036
202/833-4700

Sister M. Gallin
Association of Catholic Colleges and Universities
1 Dupont Circle
Washington, D.C. 20036
202/293-5954

William C. Gescheider
Chief of Planning Staff
Bureau of Post-Secondary Education
400 Maryland Avenue, S.W.
#3/ Room 4674
Washington, D.C. 20202
202/245-2787

William S. Graybeal
Research Specialist
National Education Association
1201 16th Street, N.W.
Washington, D.C. 20036
202/833-5456

K. Scott Hughes
Senior Consultant
Peat Marwick and Mitchell
San Francisco, CA

James A. Hyatt
Associate Director
Financial Management Center
National Association of College and University
Business Officers
1 Dupont Circle, N.W., Suite 510
Washington, D.C. 20036
202/296-2346

Lawrence MacDonald
Senior Fiscal Analyst
Bureau of the Census
Government Division
Scuderi Building
Washington, D.C. 20233
202/763-5847

Joseph G. Rossmeier
Director of Planning and Research and Management Services
Northern Virginia Community College
8333 Little River Turnpike
Annandale, Virginia 22003
703/323-3106

Frank Schmidtlein
Director, Academic and Financial Planning
Maryland State Board of Higher Education
College Park, Maryland 20742
301/454-4702

Jacob Stampen
Senior Research Associate
American Association of State Colleges and Universities
1 Dupont Circle--Suite 700
Washington, D.C. 20036
202/293-7070, Extension 50

William Toombs
Center for the Study of Post-Secondary Education
Penn State University
University Park, Pennsylvania 16802
814/865-6346

Richard Wilson
American Association of Community and Junior Colleges
1 Dupont Circle
Washington, D.C. 20036
202/293-7050

Paul Wing
Coordinator, State Education Department
Office of Post-Secondary Research Information
Systems and Institutional Aid
Cultural Education Center
Room 5-B, 44
The University of the State of New York
Albany, New York 12230
518/474-5091

APPENDIX B

QUESTIONNAIRE FOR SURVEY OF SELECTED SAMPLE OF KNOWN PURCHASERS OF HEGIS DATA

Independent Survey Conducted by
Ms. Audrey Cain
Data Used for Study
with Her Permission

QUESTIONNAIRE

FOR KNOWN PURCHASERS OF HIGHER EDUCATION GENERAL INFORMATION SURVEY (HEGIS) DATA

Appropriate questions were selected from this questionnaire/interview guide for the individual or organization that was being surveyed.

A. Please tell us which of the following purposes you have used HEGIS data for:

Purpose	For Whom Prepared	Name of Publication/Agency
(1) Investigating financial condition of higher education		
(2) Manpower Planning		
(3) Enrollment projections		
(4) Market planning or analysis		
(5) Library planning		
(6) Facilities planning		
(7) Status of Higher Education		
by private sector		
by public sector		
in adult and continuing education		
in vocational/technical education		
(8) Other (Please describe)		

B. Several criticisms and suggestions have been made for improving the collection and use of HEGIS Data. These suggestions have included the following: Please indicate by the following objectives your feelings on the scale to the right.

	Strongly Agree	*Agree*	*Don't know*	*Disagree*	*Strongly Disagree*
(1) Completeness should be sacrificed in the interests of timely delivery.					
(2) To improve timely delivery,					
a. Missing data should be imputed or estimated by the National Center for Education Statistics during the edit of input from colleges.					
b. Colleges and/or states which do not report on schedule should be identified in the edited tapes and publications as having failed to supply the necessary data.					
(3) The National Center for Education Statistics should begin to use merged data to report the conditions of higher education in terms of financial indicators.					

	Strongly Agree	Agree	Don't know	Disagree	Strongly Disagree
(4) The National Center for Education Statistics should investigate the feasibility of chartering profit or non-profit institutions to distribute HEGIS data on computer tapes.					
(5) Student data should be collected by HEGIS on the following:					
● means and standard deviations of scores on admission tests.					
● means and standard deviations on government-financed financial aid awards.					
● means and standard deviations on private or institutional financial awards to students.					
● % of student body receiving financial awards.					
● Other (Please describe)					

C. If you had to modify the data file, would you have preferred to have the work done according to your specifications by NCES? *Yes* ___ *No* ___

D. If yes to above question, would you have been willing to pay an extra amount to have the work done? *Yes* ___ *No* ___

E. Do you feel that the documentation provided with the data file was adequate for you to fully access and utilize the data? *Yes* ___ *No* ___

F. Did you have to perform any of the following modifications to the data file before you could use it?

☐ 1. Reformat, retaining all variables and cases, e.g., reblock, rearrange variables, aggregate cases.

☐ 2. Convert to different tape characteristics, e.g., change density, recopy to bypass label.

☐ 3. Sub-set, eliminating certain variables and/or cases.

☐ 4. No modifications required, used tape as received.

G. How did you find out about the HEGIS tape files?

☐ 1. Previous user of HEGIS data.

☐ 2. NCES announcement, bulletin or publication.

☐ 3. Notice in non-NCES publication.

☐ 4. Mentioned at a meeting.

☐ 5. Other (specify) ______________________________

H. Which software packages, if any, were used to analyze the HEGIS files?

☐ 1. SPSS

☐ 2. SAS

☐ 3. BMD

☐ 4. BMD ("P" series)

☐ 5. IMSL

☐ 6. Other (specify) ______________________________

☐ 7. None

APPENDIX C

QUESTIONNAIRE FOR SURVEY OF RANDOM SELECTION OF HIGHER EDUCATION INSTITUTIONS AND AGENCIES

(Responses to Questions are Shown)

Independent Survey Conducted by
Ms. Audrey Cain
Data Used for Study
with Her Permission

QUESTIONNAIRE TO DETERMINE
USES OF HIGHER EDUCATION
GENERAL INFORMATION SURVEY (HEGIS)

Organization Name ________________________________

Address ________________________________

Respondent's Name ____________________ Telephone ____________

Position ____________________

1. How often have you used the following HEGIS information? (Please circle the appropriate number of the response for each of the following items.)

1 - never
2 - once
3 = two to five times
4 - more than five times

	1. Never	2. Once	3. Two to five times	4. More than five times
	------ Percent			------
A. Institutional characteristics (2300.1)	48	12	18	22
B. Degrees and other formal awards conferred by discipline, sex and level (2300.2.1)	31	19	24	26
C. Degrees and other formal awards conferred by discipline, race, sex and level (2300.2.1)	34	20	30	16
D. Fall enrollment by discipline, race, sex and level of student (2300.2.3)	28	14	23	35
E. Residence and migration of students (2300.2.8) . .	47	21	19	13
F. Employees: salaries, tenure and fringe benefits				
Total Employees (2300.3) . . . . (Including Faculty)	44	18	21	17
Full-Time Instructional Faculty (2300.3) . . .	40	13	25	22
	44	26	21	9
H. Financial statistics of institutions (2300.4) . .	41	14	24	21
I. Facilities (2300.7)	54	18	19	9
J. Adult/Continuing Education (2300.8)	60	20	14	6
K. Enrollment by field/Post-baccalaureate and Upper Division (Discontinued in 1977) (2300.2.9) . . .	72	9	11	8

2. a. How often were data bases merged with each other? (Please circle the appropriate number below.)

1 - never
2 - once
3 - two to five times
4 - more than five times

b. If you have merged data, please show the data bases you have merged together by listing the appropriate letter designators on the same line. For example, [A,B,I (1)]

DATA BASES - SURVEY TITLES

A. Degrees and other formal awards conferred by discipline, sex and level (2300.2.1)

B. Degrees and other formal awards conferred by discipline, race, sex and level (2300.2.1)

C. Fall enrollment by discipline, race, sex, and level of student (2300.2.3)

D. Residence and migration of students (2300.2.8)

E. Employees: salaries, tenure and fringe benefits
Total Employees (2300.3) (including Faculty)
Full-Time Instructional Faculty (2300.3)

F. College and university libraries (2300.5)

G. Financial statistics of institutions (2300.4)

H. Facilities (2300.7)

I. Adult/Continuing Education (2300.8)

MERGED BASES

[__________]

[__________]

[__________]

[__________]

J. Other data bases. Please give descriptive title, Agency:

(1) ______________________________

(2) ______________________________

(3) ______________________________

(4) ______________________________

(5) ______________________________

2. (a) How often were data bases merged with each other?

(b) If you have merged data, please show the data bases you have merged together by listing the appropriate letter designators on the same line.

Level of Use	1. Never	2. Once	3. Two to five times	4. More than five times
Percent	72	7	12	9

	-------------frequency of merger-------------							
	Fall enrollment by discipline, race, sex, and level of student (2300.2.3)	Residence and migration of students (2300.2.8)	Employees: salaries, tenure and fringe benefits Total Employees (2300.3) (Including Faculty)	Full-time Instructional Faculty (2300.3)	College and University Libraries (2300.5)	Financial statistics of institutions (2300.4)	Facilities (2300.7)	Adult/Continuing Education (2300.8)
Degrees and other formal awards conferred by discipline, sex and level (2300.2.1) . . .	2	3		1	1	2	1	1
Degrees and other formal awards conferred by discipline, race, sex, and level (2300.2.1) .	4	4	1		3			
Fall enrollment by discipline, race, sex, and level of student (2300.2.3)		1	3	1		3		
Residence and migration of students (2300.2.8)			1		3			1
Employees: salaries, tenure and fringe benefits Total Employees (incl. faculty) (2300.3) .				1	1			
Full-time Instructional Faculty (2300.3)						2		
College and University libraries (2300.5)				1		1		
Financial Statistics of institutions (2300.4)							2	

Note 1: 13% of respondents merged other data with HEGIS.

Note 2: Format of questionnaire has been modified to permit tabulation.

3. How often have you used or analyzed HEGIS data for the following purposes? (Please circle the appropriate number of the response for each of the following items.)

1 - never
2 - once
3 - two to five times
4 - more than five times

	1. Never	2. Once	3. Two to five times	4. More than five times
	------ Percent			------
A. Independent (Department Research)	53	6	24	17
B. Sponsored Research	69	7	13	11
C. To justify budgets				
(1) Internally	61	16	14	9
(2) With state agencies				
(a) by comparing institutional enrollment with others	68	13	13	6
(b) by comparing faculty salaries with others	70	14	13	3
(c) by comparing office, class and laboratory space with others	77	15	7	1
(d) by comparing libraries with others	80	13	5	2
D. For analyzing an institution's share of the student pool in comparison with similar institutions	61	17	17	5

4. How often have you used or analyzed HEGIS data for the following purposes? (Please circle the appropriate number of the response for each of the following items.)

1 - never
2 - once
3 - two to five times
4 - more than five times

	1. Never	2. Once	3. Two to five times	4. More than five times
	------ Percent			------
A. For showing legislators, executive agencies or other policy makers (including staff) how the following items compare with other institutions:				
(1) faculty salaries	51	21	19	9
(2) percent of faculty tenured	62	19	14	5
(3) residence and migration of students	64	20	11	5
(4) degrees and other formal awards conferred by:				
discipline	55	20	18	7
race	61	20	14	5
sex	65	17	12	6
level	57	20	15	8
(5) fall enrollment by:				
discipline	52	19	22	7
race	59	18	16	7
sex	56	19	16	9
(6) classified employed salaries	69	16	12	3
(7) library quality	62	25	12	1
(8) financial status	60	17	17	6
B. To analyze the mix of students by discipline in your institution with the mix of students by discipline in similar institutions	67	15	14	4

5. How often have you used HEGIS data (your own or others) for the following purposes? (Please circle the appropriate number of the response for each of the following items.)

1 - never
2 - once
3 - two to five times
4 - more than five times

	1. Never	2. Once	3. Two to five times	4. More than five times
	-----	Percent	-----	
A. Planning				
(1) at the Federal level	69	9	11	11
(2) at the State level	59	9	20	12
(3) at the Institutional level	40	14	25	21
(4) at the Program Level	54	11	21	14
B. To evaluate progress on affirmative action programs through comparisons.				
(1) with regional norms	67	19	9	5
(2) with national norms	72	15	8	5
C. To compute financial indicators.				
(1) for analyzing faculty and staffing patterns using comparative statistics	68	11	16	5
(2) for comparing revenues to expenditures	64	18	8	10
(3) for comparing costs per student	58	16	18	8
D. To evaluate staffing patterns for personnel actions	76	15	6	3
E. For facilities planning of:				
(1) classrooms	72	15	8	5
(2) housing	82	10	2	6

6. What regional or national data bases other than HEGIS have you used for the purposes listed in Questions 3 and 4 above?

WICHE	SREB	NCHEMS	Ed. Association	Other	None
2.5	4.5	4.5	2.5	60	26

-- percent --

Reason for using such data in preference to HEGIS data.

Accuracy	Timeliness	Germane to Region	Germane to Institution	Other
16	6	14	19	45

-- percent --

7. How often are the results of studies and reports using HEGIS data released in the following ways? (Please circle the appropriate number of the response for each of the following items.)

1 - never
2 - once
3 - two to five times
4 - more than five times

	1. Never	2. Once	3. Two to five times	4. More than five times
	Percent			
A. Internal reports	35	16	25	24
B. Reports to State Agencies	48	16	22	14
C. Reports to Federal Agencies	50	15	19	16
D. Publications in journals and books	62	19	7	12
E. Reports to news media	63	9	13	15
F. Reports to Alumni, trustees	59	8	24	9

G. Other - 17%
No other - 83%

8. For your purposes how would you rate HEGIS data on the following characteristics? (Please circle the appropriate number of the response for each of the following items.)

1 - poor
2 - acceptable
3 - good
4 - very good

	1. Poor	2. Acceptable	3. Good	4. Very good
	Percent			
A. Timeliness	47	35	15	3
B. Accuracy	15	35	36	14
C. Sufficiency of detail	17	34	33	16
D. Comparability of categories with local groupings	41	33	23	3
E. Consistency of categories over time	11	36	40	13
F. Identifiability of similar institutions	36	33	24	7

9. How often do you obtain HEGIS data in the following forms? (Please circle the appropriate number of the response for each of the following items.)

1 - never
2 - once
3 - two to five times
4 - more than five times

	1. Never	2. Once	3. Two to five times	4. More than five times
	------ Percent			------
A. Copies of questionnaire responses from other institutions	67	14	12	7
B. Computer Tapes from NCES*	85	6	4	5
C. Special tabulations from NCES	72	13	10	5
D. Printed reports from NCES	31	19	31	19
E. Printed reports from other governmental agencies.	58	10	13	19
F. Secondary Sources	73	8	5	14

*National Center for EDUCATION STATISTICS

10. For your purpose, which of the following require a universe survey rather than a sample survey?

	Statistical Sample	Universe
	---- Percent	----
a. Institutional characteristics (2300.1)	43	57
b. Degrees conferred by discipline, race, sex and level (2300.2.1)	44	56
c. Degrees conferred by discipline, sex and level of student (2300.2.3)	43	57
d. Fall enrollment by discipline, race, sex and level of student (2300.2.3)	37	63
e. Residence and migration of students (2300.2.8)	69	31
f. Employees: salaries, tenure and fringe benefits		
Total Employees (2300.3) (including Faculty)	56	44
Full-Time Instructional Faculty (2300.3)	48	52
g. College and university libraries (2300.5)	73	27
h. Financial statistics for institutions (2300.4)	45	55
i. Facilities (2300.7)	69	31
j. Adult/Continuing Education (2300.8)	77	23

11. For your purpose which of the following surveys should be conducted annually, every other year, or every four years?

	1. Annually	2. Every Other Year	3. Every Four Years
	----Percent----		
a. Institutional characteristics (2300.1)	47	26	27
b. Degrees conferred by discipline, race, sex and level (2300.2.1)	62	30	8
c. Degrees conferred by discipline, sex, and level (2300.2.1)	69	25	6
d. Fall enrollment by discipline, race, sex, and level of student (2300.2.3) . .	87	11	2
e. Residence and migration of students (2300.2.8)	25	43	32
f. Employees: Salaries, tenure and fringe benefits			
Total Employees (2300.3) (including Faculty)	57	34	9
Full-Time Instructional Faculty (2300.3)	62	31	7
g. College and university libraries (2300.5)	20	51	29
h. Financial statistics for institutions (2300.4) . .	62	31	7
i. Facilities (2300.7)	11	32	57
j. Adult/Continuing Education (2300.8)	36	50	14

12. What do you consider to be the three major strengths of HEGIS? (Open-ended question, results discussed in the Findings, Chapter IV.)

1. National Comparison Purposes	2. Categories of data	3. Wealth of data	4. Contract Format	5. Complete	6. Consistency	7. Relevance	9. Peer Comparison Purposes
19	2	9	7	18	19	15	11

-- Percent --

13. What do you consider to be the three major weaknesses of HEGIS? (Open-ended question, results discussed in the Findings, Chapter IV.)

1. Timeliness	2. Availability of Data (Accuracy)	3. Too much detail/ cost	4. Reliability	5. Definition	6. Purpose of Data	7. Instructions Unclear	8. Other	9. Population Emphasis on 4-year Colleges Nationally
23	8	8	6	10	7	4.5	29	4.5

-- Percent --

14. Please send samples of reports, presentations or memos that use HEGIS or HEGIS-like data.

15. Other comments on the uses of HEGIS and recommendations for improving collection and use would be appreciated.

(Open-ended question, results discussed in the Findings, Chapter IV.)

1. Leave Us Alone	3. Hold More Workshops/ Conferences	5. Put Out Comparable Institutional Type Data	6. Improve Definitions	8. Other	9. Mail Directly to Responsible Office
Percent					
14	2	5	7	70	2

APPENDIX D

INTERVIEW GUIDE

INTERVIEW GUIDE

This guide is intended to be used with many different types of users: members of Congressional Staff, scholars and researchers, personnel officers, members of federal and state agencies, administrators in higher educational institutions, and members of the media. It is most important that you probe to determine:

(1) What difficulties the interviewee has in either compiling or using HEGIS data. Is it lack of familiarity on his part with the data or with such readily available sources of the data as the Digest of Educational Statistics, the Fact Book on Higher Education, or the many NCES reports? Or is it the result of tardiness of the data in published or tape form?

(2) The interviewee's familiarity with the availability of the HEGIS tapes. What difficulties he has encountered in using such tapes.

(3) Problems the interviewee perceives concerning accuracy. Source of such perceptions?

(4) The interviewee's uses of secondary sources for HEGIS data. If used, why?

(5) How the interviewee thinks HEGIS COULD BE IMPROVED BOTH IN COLLECTION AND IN DISSEMINATION.

(6) What potential users or uses he* can identify. Why?

(7) His specific suggestions for changes in collection or dissemination that would facilitate the use of HEGIS: for example, additional analysis, changes in formats, merging data, etc.

(8) His specific suggestions for scheduling collection and dissemination of data, methods of collection, checking (editing), and coordination.

---

*Generic.

APPENDIX E

LIST OF INTERVIEWEES

John Augenblick	Education Commission of the States Education Finance Center Denver, CO 80203
Marie Baez	Assistant to the President of Chicano Affairs Stanford University Stanford, CA 94305
Curtis O. Baker	Systems Design and Analysis Branch National Center for Education Statistics Washington, DC
Richard Beazley	Survey Director National Center for Education Statistics Washington, DC
Dick Berry	National Science Foundation Washington, DC
Howard Bowen	Avery Professor Claremont Graduate School Claremont, CA 91711
Norman Brandt	Survey Director National Center for Education Statistics Washington, DC
David Brennan	Brookings Institute Washington, DC
Bob Brown	Division of Survey Techniques Bureau of Labor Statistics Washington, DC
Rozzelle Bruno	Census Bureau Washington, DC
Marine Buma	Associate Controller, Accounting Office Stanford University Stanford, CA 94305
Robert Calvert	Survey Director National Center for Education Statistics Washington, DC
Pamela Christoffel	Researcher, Adult Learning College Board Washington, DC

Douglas Collier	National Center for Higher Education Management Systems Boulder, CO 80302
Susan Cote	Associate Director of Libraries Massachusetts Institute of Technology Cambridge, MA
Ken Creighton	Controller Stanford University Stanford, CA 94305
Tlich Cruza	Massachusetts State Board of Education Boston, MA
James Culliston	Vice President, Planning Massachusetts Institute of Technology Cambridge, MA
Nathan Dickmeyer	Economic and Finance Unit American Council on Education Washington, DC 20036
Jonathan Dorfman	Statistician Data Systems Branch National Center for Education Statistics Washington, DC
Nadine Edeles	Education Program Specialist Statistical Information Office National Center for Education Statistics Washington, DC
Leo Eiden	Education Program Specialist Statistical Information Branch National Center for Education Statistics Washington, DC
Virginia Fadil	Research Director National Association of Independent Colleges and Universities Washington, DC
Paula Faulkner	Researcher, Planning University of California Los Angeles, CA 90024
Don Finley	Legislative Analyst Richmond, VA

Bruce Fleming	Black Concerns Staff Director Department of Education Washington, DC
John Folger	Policy Project Coordinator Education Commission of the States Denver, CO 80295
Patsy Foster	Programmer Survey Research Center University of California Berkeley, CA
Carol Frances	Chief Economist and Director Economic and Finance Unit American Council of Education Washington, DC 20036
William C. Gescheider	Bureau of Higher and Continuing Education Department of Education Washington, DC
Fontelle Gilbert	Research Director American Association of Community and Junior Colleges Washington, DC 20036
Kevin Gilmartin	Project Director American Institute for Research Palo Alto, CA 94302
Larry Gladieux	Director College Board Washington, DC
Lyman Glenny	Professor of Higher Education University of California Berkeley, CA 94720
Robert Houghton	Associate Registrar Stanford University Stanford, CA 94305
Helena Howell	Community College Unit Department of Education Washington, DC
James A. Hyatt	Associate Director Financial Management Center National Association of College and University Business Offices Washington, DC 20036

Gregg Jackson	Professor of Higher Education College of Education Harvard University Cambridge, MA 02138
Pauline Knapper	Economic and Finance Unit American Council on Education Washington, DC 20036
Laurence Kojaku	Director of Institutional Studies SUNY--Buffalo Buffalo, NY
Martin Kramer	Senior Research Associate Carnegie Council on Higher Education Berkeley, CA
Eric Kurtz	Director of Institutional Research Harvard University Cambridge, MA
Freddie Lieberman	Title 3 Program Department of Education Washington, DC
Margaret Loeb	Institutional Researcher Massachusetts Institute of Technology Cambridge, MA
Jay Lucker	Director of Library Massachusetts Institute of Technology Cambridge, MA
Sally Mahoney	Associate Provost and Registrar Stanford University Stanford, CA 94305
Lewis Mayhew	Professor of Higher Education Stanford University Stanford, CA 94305
Jim McClain	Compliance Analyst State Council of Higher Education Richmond, VA
Marilyn McCoy	National Center for Higher Education Management Systems Boulder, CO 80302
Don McLaughlin	Project Director American Institute for Research Palo Alto, CA

Paul Mertins	HEGIS Branch Chief National Center for Education Statistics Washington, DC
Jim Mingle	Southern Regional Educational Board Atlanta, GA
John Minter	President John Minter Associates Boulder, CO 80306
Fred Moon	Treasurer Pomona College Claremont, CA 91711
Jim Moore	Acting Director, Program Review Bureau of Student Financial Aid U. S. Office of Education Washington, DC
Jim Morgan	Director of Management Information Systems State University System of Florida Tallahassee, FL 32304
J. Michael Mullen	Data Coordinator Commonwealth of Virginia Council of Higher Education Richmond, VA 23219
Michael A. Olivas	Director of Research LULAC Washington, DC
Jeff Paton	Graduate Student Stanford University Stanford, CA 94305
Andrew Pepin	Survey Director National Center for Education Statistics Washington, DC
Kent R. Peterson	Associate Vice President Director of Management and Financial Planning Stanford University Stanford, CA 94305
Michael Pilot	Editor, Occupation Outlook Bureau of Labor Statistics Washington, DC
Art Podolsky	Survey Director National Center for Education Statistics Washington, DC

Martha Robinson	Program Analyst State Council of Higher Education Richmond, VA
Janet Rule	Research Associate Center for Study of Higher Education University of California Berkeley, CA 94720
Jane Ryland	Director SHEEO/NCES Communication Network Boulder, CO 80302
Bob Schultz	Financial Analyst State Council of Higher Education Richmond, VA
Jane Skettle	Director of Institutional Research Boston University Boston, MA
Caroline Smith	Survey Director National Center for Education Statistics Washington, DC
Stan Smith	Survey Director National Center for Education Statistics Washington, DC
Verne Stadtman	Editor, Carnegie Reports Carnegie Council of Higher Education Washington, DC
Jessy Ulin	Office of Resources and Operations of the National Advisory Council on Extension and Continuing Education Department of Education Washington, DC
John Van Zandt	National Occupational Information Coordinating Committee Washington, DC
Valerie Veronin	Staff Assistant Office of Management and Budgets Stanford University Stanford, CA 94305
Betty Ward	Black Concerns Staff Department of Education Washington, DC

Walter Webb	Director National Occupational Information Coordinating Committee Washington, DC
Richard Wilson	Vice President, Government Relations American Association of Community and Junior Colleges Washington, DC 20036
Dr. Paul Wing	Coordinator, State Education Department Office of Post-Secondary Research Information New York State University Albany, NY 12230
Charles Woodman	Director of Space Planning Boston University Boston, MA
Bob Yuill	Data Systems Branch National Center for Education Statistics Washington, DC

APPENDIX F

LIST OF TAPE PURCHASERS

JANUARY 1978 TO AUGUST 1979

LEGEND OF SURVEY ABBREVIATIONS USED IN FOLLOWING LISTINGS:

Surveys	
OFE	Opening Fall Enrollment
ERD	Degrees Conferred
DIR	Institutional Characteristics
EMP	Employees
RM	Residence/Migration
FIN	Financial Status
LIB	Libraries
FAC	Facilities
Ad. D -	Upper-Division and Post Baccalaureate Enrollment (Enrollment by Field)

Survey Years	
I	1966-67
II	1967-68
III	1968-69
IV	1969-70
V	1970-71
VI	1971-72
VII	1972-73
VIII	1973-74
IX	1974-75
X	1975-76
XI	1976-77
XII	1977-78
XIII	1978-79

F-3

SUMMARY OF REQUESTS FOR HEGIS DATA RECEIVED BY NCES FOR 20-MONTH PERIOD JANUARY 1978 TO AUGUST 1979

Type of Requestor	Type of Data Opening Fall Enrollment	Degrees Conferred	Institutional Characteristics	Employees	Residence/ Migration	Financial Status	Libraries	Facilities	Upper Div'n. and Post-Baccalaureate Enrollment (Enrollment by field)	Total
Federal Government	24	41	8	10	2	18	7	2	8	120
State Government	10	13	8	8		5	2		1	47
Quasi-Governmental	5	4	13	3	1	3			1	30
Educational Associations	12	7	6	4	1	5				35
Professional Associations			1	7		2	1			11
Foundations	2	2	4							8
Institutions	16	12	51	14	2	16	2	1	9	123
Private Scholars		1	2	1		13			1	18
Business/ Commercial	20	8	64	5		1	1	1		100
TOTAL	89	88	157	52	6	63	13	4	20	

FEDERAL GOVERNMENT (N = 13)

Purchaser	Date	Tape Description	
Air Force--ROTC	2-8-78	ERD	XI
	1-25-79	ERD	XI
		ERD	XII
		OFE	XI
Bureau of Labor Statistics	1-5-78	ERD	VIII
		ERD	IX
		ERD	X
		ERD	XI
	3-29-79	EMP	XI
Census Bureau	8-9-78	DIR	XII
Congressional Budget Office	5-24-78	DIR	XI
Department of Health Education and Welfare/Office of Education/Office of Evaluation and Dissemination	6-22-79	OFE	IX
	7-19-79	FIN	VII
		FIN	IX
		OFE	VI
	5-31-79	OFE	XII
	4-17-79	FIN	VIII
		FIN	X
		OFE	VIII
		OFE	X
	5-23-78	DIR	X
		DIR	XI
		DIR	XII
	10-31-78	FIN	XI
		FIN	XII
Department of Labor	9-22-78	DIR	XII
Equal Employment Opportunity Commission	3-3-78	ERD	XI
		OFE	XI
	7-11-78	ERD	XI

Purchaser	Date	Tape Description	
HEW--Administration on Aging	3-13-79	DIR	XII
National Clearinghouse on Aging	2-14-79	LIB	XI
Navy Recruiting--Arlington, Va.	1-13-78	ERD	XI
	1-20-78	OFE	XI
	3-14-78	DIR	XII
	11-6-78	OFE	XII
	11-8-78	ERD	XII
Office of Civil Rights	7-9-79	FAC	VI
		FAC	IX
		RM	VII
		RM	X
		LIB	III
		LIB	VI
		LIB	VIII
		LIB	IX
		LIB	XI
		LIB	XII
		FIN	I
		FIN	II
		FIN	III
		FIN	IV
		FIN	V
		FIN	VI
		FIN	VII
		FIN	VIII
		FIN	IX
		FIN	X
		FIN	XI
		Ad.D	IV
		Ad.D	V
		Ad.D	VI
		Ad.D	VII
		Ad.D	VIII
		Ad.D	IX
		Ad.D	X
		Ad.D	XI

Purchaser	Date	Tape Description
Office of Civil Rights (Continued)	7-9-79	EMP VI
		EMP VII
		EMP VIII
		EMP IX
		EMP X
		EMP XI
		EMP XII
		OFE I
		OFE II
		OFE III
		OFE IV
		OFE V
		OFE VI
		OFE VII
		OFE VIII
		OFE IX
		OFE X
		OFE XI
		OFE XII
		OFE XIII
		ERD IV
		ERD V
		ERD VI
		ERD VII
		ERD VIII
		ERD IX
		ERD X
		ERD XI
		ERD XII
		ERD XIII
U.S. Department of Agriculture	4-10-79	ERD VI
		ERD VII
		ERD VIII
		ERD IX
		ERD X
		ERD XI
		ERD XII
U.S. Department of Commerce	3-12-79	DIR XIII

Purchaser	Date	Tape Descritpion
U.S. Department of Justice	4-17-79	ERD XII
		OFE XI
		OFE XII
		FIN XII
		EMP XI
		EMP XII
	5-8-79	ERD I
		ERD II
		ERD III
		ERD IV
		ERD V
		ERD VI
		ERD VII
		ERD VIII
		ERD IX
		ERD X
		ERD XI

STATE GOVERNMENT (N = 12)

Purchaser	Date	Tape Description	
Illinois Board of Higher Education	5-29-79	EMP	XII
		ERD	XII
		OFE	XII
		FIN	XII
		DIR	XIII
	6-19-79	EMP	XI
Kentucky Council on Higher Education	5-30-78	DIR	XII
	7-31-78	EMP	XII
Minnesota Higher Education Coordinating Council	3-15-79	ERD	VIII
		ERD	IX
		ERD	X
		ERD	XI
		ERD	XII
Minnesota State University Board	3-2-78	DIR	XII
Missouri Department of Higher Education	3-14-78	ERD	X
		EMP	X
		FIN	X
		OFE	X
	7-21-78	ERD	IX
		EMP	IX
		FIN	IX
		OFE	IX
		Ad.D	X
		OFE	XI
New England Board of Higher Education	9-1-78	OFE	XII
		FIN	XII
		ERD	XII
	9-18-78	EMP	XII
New York City Board of Education	1-16-78	OFE	XI
		ERD	XI
North Carolina Department of Public Instruction	10-25-78	DIR	XII

Purchaser	Date	Tape Description	
State of Alaska	8-10-78	DIR	XII
South Carolina State Board for Technical and Comprehensive Education	8-2-78	DIR	XII
Texas Coordinating Board for Colleges and Universities	10-12-78	OFE	XI
		ERD	XII
	2-22-79	ERD	XI
Virginia State Council for Higher Education	1-31-78	OFE	XI
	4-5-78	ERD	XII
		OFE	X
		OFE	XI
		EMP	XI
		EMP	XII
		FIN	XI
		LIB	XI
		DIR	XI
		DIR	XII
	6-21-79	LIB	XII

QUASI-GOVERNMENTAL (N = 7)

Purchaser	Date	Tape Description	
Educational Management Services	5-31-79	ERD	XII
Educational Testing Service	3-27-78	DIR	XII
Higher Education Research Institute	10-3-78	OFE	XII
	11-27-78	DIR	VIII
		DIR	IX
		DIR	X
		DIR	XI
		DIR	XII
		ERD	XI
		ERD	XII
		EMP	XI
		EMP	XII
		FIN	XI
		FIN	XII
Institute for International Education	4-11-79	DIR	XIII
Institute for Study of Educational Policy	2-14-78	OFE	VII
		OFE	IX
		OFE	XI
International Education Advisory Services	1-20-78	DIR	XI
National Center for Higher Education Management Systems	3-22-79	DIR	XIII
	3-13-78	Ad.D	XI
	10-5-78	OFE	XII
	10-23-78	FIN	XII
	11-8-78	ERD	XII
	11-20-78	EMP	XII
	2-23-79	DIR	VII
		DIR	VIII
		DIR	IX
		RM	VII

EDUCATIONAL ASSOCIATIONS (N = 9)

Purchaser	Date	Tape Description	
American Council on Education	1-30-78	ERD	XI
		FIN	XI
		OFE	XI
	10-31-78	FIN	XII
		OFE	XII
		EMP	X
		OFE	X
	11-20-78	ERD	XII
		EMP	XII
	2-26-79	DIR	XIII
	3-14-79	OFE	XI
	5-10-79	EMP	XI
Association of American Federal Colleges	2-14-78	DIR	XI
College Board	4-23-79	DIR	XIII
	6-14-79	OFE	VIII
		OFE	IX
		OFE	X
		OFE	XI
		OFE	XII
		OFE	XIII
		RM	X
College Placement Council	7-28-78	ERD	XII
National Association of College Auxiliary Services	5-5-78	DIR	XII
National Endowment for the Humanities	3-15-79	DIR	XIII
National Institute of Independent Colleges and Universities	11-16-78	FIN	XII

Purchaser	Date	Tape Description	
Southern Regional Education Board	2-13-78	OFE	XI
	3-13-78	ERD	XI
	12-1-78	FIN	XII
	2-27-79	ERD	XII
University Consortium for Political and Social Research	6-20-78	ERD	XI
		DIR	XI
		FIN	XI
		OFE	XI
		EMP	XI

PROFESSIONAL ASSOCIATIONS (N = 2)

Purchaser	Date	Tape Description	
American Association of University Professors	3-20-78	EMP	XII
	6-21-78	LIB	XIII
	2-1-79	EMP	XIII
National Education Association	2-1-78	EMP FIN	XI XI
	3-24-78	EMP	XII
	7-25-78	EMP	XII
	10-5-78	EMP	XII
	3-28-79	EMP FIN	XIII XII
	4-26-79	DIR	XIII

FOUNDATIONS (N = 4)

Purchaser	Date	Tape Description	
Center for Competency Based Education	6-12-78	DIR	XII
	9-23-78	OFE	XII
Council for Exchange of Scholars	2-28-78	DIR	XII
Southern Education Fund	6-1-79	OFE	XI
		ERD	XI
		ERD	XII
Truman Scholar Foundation	5-3-78	DIR	XII
	5-1-5-79	DIR	XIII

INSTITUTIONS (N = 28)

Purchaser	Date	Tape Description	
Arizona State University	5-30-78	ERD	XI
	10-20-78	DIR	XII
Brazosport College	7-18-78	DIR	XII
Central University of Iowa	7-24-78	DIR	XII
Claremont Graduate School	3-28-78	DIR	XII
	6-11-79	DIR	XIII
Columbia University	2-26-79	DIR	XIII
Creighton University	8-11-78	DIR	XII
Dartmouth College	11-21-78	FIN	XI
	3-7-79	DIR	XIII
Douglas College	3-24-78	FIN	XI
Eastern Kentucky University	1-2-79	DIR	XII
Fairleigh-Dickenson University	8-10-78	DIR	XII
Florida State University	1-15-79	ERD ERD	XI XII
Florida Technological University	2-22-78	DIR	XII
Georgia State University	1-9-79	DIR	XII
Harvard University	6-19-78	DIR	XII
Indiana University of Pennsylvania	6-19-79	EMP	XI
	6-5-79	DIR	XIII
Johns Hopkins University	10-16-78	RM	X
Kansas State University	1-22-78	DIR	XII

Purchaser	Date	Tape Description	
Miami-Dade Community College	8-15-78	DIR	XII
Oakland University	4-13-79	Ad.D	XI
Oak Ridge Associated University	12-15-78	DIR	XII
Ohio State University	4-21-78	RM	X
	7-13-78	DIR	XII
Pennsylvania State University	4-26-79	OFE	VII
		OFE	VIII
		OFE	IX
		OFE	X
		OFE	XI
		OFE	XII
		DIR	VII
		DIR	VIII
		DIR	IX
		DIR	X
		DIR	XI
		DIR	XII
		DIR	XIII
		ERD	VIII
		ERD	IX
		ERD	X
		ERD	XI
		ERD	XII
		FIN	VIII
		FIN	IX
		FIN	X
		FIN	XI
		FIN	XII
		EMP	VII
		EMP	IX
		EMP	X
		EMP	XI
		EMP	XII
		Ad.D	VII
		Ad.D	VIII
		Ad.D	IX
		Ad.D	X
		Ad.D	XI

Purchaser	Date	Tape Description	
St. Cloud State University	5-22-78	DIR	XII
St. Johns University	4-5-78	FIN	XI
Stanford University	4-31-79	DIR	XIII
	7-5-79	ERD	XII
State University of New York--Stoney Brook	1-9-79	DIR	XII
State University of Potsdam	6-8-79	DIR	XIII
Tennessee State University	7-6-79	DIR	XIII
Texas A & M	10-27-78	DIR	XII
University of Alabama	7-2-79	DIR	XIII
	7-31-79	EMP	XII
University of Arizona	4-3-78	OFE	XI
		OFE	XII*
	11-24-78	OFE	XII
	2-26-79	FIN	XI
	5-18-79	EMP	V
		EMP	VII
		EMP	XI
		EMP	XII
		OFE	XIII
University of Arkansas	3-1-78	DIR	XII
	3-30-78	DIR	XII*
University of Bridgeport	3-14-79	EMP	VII
University of California--Irvine	1-31-78	Ad.D	VIII
		Ad.D	IX
University of Illinois	11-22-78	DIR	X
	7-6-79	DIR	XIII

Purchaser	Date	Tape Description	
University of Kentucky	4-17-79	EMP	XIII
University of Louisville	1-25-79	LIB	XII
		FIN	XII
		EMP	XII
		ERD	XII
		OFE	XII
		Ad.D	XI
University of Maine	1-12-79	FIN	XII
		EMP	XII
University of Minnesota	5-22-78	OFE	V
		FIN	VI
University of Missouri	5-19-78	DIR	XII
University of North Carolina	1-5-78	DIR	XI
	3-30-78	OFE	XI
	9-1-78	DIR	XII
	10-12-78	ERD	XI
	11-22-78	OFE	XII
		FIN	XII
	5-30-79	LIB	XII
	7-27-79	EMP	XII
University of Puget Sound	7-16-78	DIR	XII
University of Rochester	1-17-78	OFE	XI
		FIN	XI
		DIR	XI
		EMP	XI
University of South Dakota	7-6-79	DIR	XIII
University of Texas	4-27-78	FAC	VI
	7-29-78	ERD	VIII
		FIN	VIII

Purchaser	Date	Tape Description	
University of Vermont	5-9-78	DIR	XI
		OFE	XI
		FIN	XI
		EMP	XI
University of Wisconsin--Madison	10-12-78	EMP	XII
		DIR	XII
	6-5-79	DIR	XIII
West Texas State University	6-12-78	DIR	XII

PRIVATE SCHOLARS (N = 5)

Purchaser	Date	Tape Description	
Abduerahman Nazi	3-2-78	DIR	XI
		ERD	XI
		Ad.D	XI
Alfred Bisnet	3-13-79	DIR	XIII
Nicholas Yarnold	12-6-78	EMP	VII
Philip Dellaway	2-14-78	FIN	VII
		FIN	XI
Stan Galicki	4-17-78	FIN	I
		FIN	II
		FIN	III
		FIN	IV
		FIN	V
		FIN	VI
		FIN	VII
		FIN	VIII
		FIN	IX
		FIN	X
		FIN	XI

BUSINESS/COMMERCIAL (N = 68)

Purchaser	Date	Tape Description	
AFSA Data Corporation	2-8-78	DIR	VI
Access Corporation	7-16-79	DIR	XIII
Addison-Wesley Publishing	5-8-78	DIR OFE	XII XII
Addresses Unlimited	2-12-79	DIR	XII
American Educational Services Inc.	6-29-78	DIR	XII
American Financial Services Association	12-7-78	DIR	XIII
Art-Carved Class Rings Inc.	7-28-78	OFE	XII
Atlantic-Richfield	7-13-78	ERD	XII
B.T.I. Computor	9-26-78	DIR	XII
Bell Laboratories	5-3-78	ERD OFE	XII XI
Bell Communications	1-18-78	OFE	XI
William C. Brown Publishing	8-1-78	DIR	XII
Citibank, Elmhurst, NY	11-1-78	DIR OFE EMP EMP	XII XII XI XII
Richard Clarke Associates	3-13-78	OFE ERD	XI XI
Comparative Guide to American Colleges	10-27-78	ERD	XII
Dearborn Aqua Services Chemical Corporation	5-22-79	DIR	XIII
Education Communication Inc.	10-30-78	DIR	XII
	7-23-79	DIR	XIII

Purchaser	Date	Tape Description	
Education Subscription Service Inc.	4-24-78	DIR	XII
	4-27-79	DIR	XIII
Education and Economics	5-16-79	DIR	XIII
Educational Publications Center	1-10-78	DIR	XII
	3-16-79	DIR	XIII
Epsilon Data Management Inc.	6-30-78	DIR	XII
	7-9-79	DIR	XIII
Fidelity Union Life Insurance Co.	1-26-79	ERD	XII
Filmsound Productions	2-5-79	DIR	XIII
Fisher Scientific	2-6-78	DIR	XI
Gale Research Co.	3-15-78	DIR	XII*
	8-4-78	DIR	XII
	7-18-79	DIR	XIII
General Motors Corporation	2-14-78	ERD OFE	XI XI
Grants Management Advisory Service	12-15-78	DIR	XII
IBM Corporation	3-8-79	ERD	XI
	3-4-79	DIR	XIII
Information and Communication Inc.	1-10-78	OFE	XII*
	3-14-78	DIR	XII
	4-9-79	DIR	XIII
Information Associates Inc.	11-14-78	DIR	XII
Institute for Services to Education, Inc.	1-13-78	OFE	XI

Purchaser	Date	Tape Description	
Inter-Varsity Christian Fellowship	3-20-78	OFE	XI
	7-9-79	OFE	XIII
International Communication Agency	1-24-79	DIR	XII
Ireland Education Corporation	7-2-79	DIR	XIII
Itran Corporation	5-31-78	ERD	X
Kappa Systems Inc.	8-10-78	DIR OFE	XII XII
Malcolm Knapp Inc.	7-20-78	DIR	XIII
Lykes Pasco Packing Co.	3-9-79	DIR	XIII
Market Data Retrieval Inc.	1-27-78	DIR	XI
	6-11-79	DIR	XIII
Market Statistics	8-28-78	OFE	XII
	8-30-78	DIR	XII
Marsh & McLennan Inc.	9-6-78	DIR	XII
C. V. Masby Co.	8-4-78	OFE	XII
McManis Associates	2-16-78	DIR	XII
Medivest Research Institute	5-4-78	OFE	XI
John Minter Associates	3-7-79	DIR	XIII
	9-13-78	EMP	IX
	4-14-78	DIR	XII
	8-2-78	OFE OFE	X XI
Morgan-Grampion Publishing Co.	8-1-79	DIR	XIII
Motorola, Inc.	6-12-79	DIR	XIII

Purchaser	Date	Tape Description	
North American Publishing Co.	6-20-79	DIR	XIII
Northern Natural Gas	3-16-78	OFE	XI
O.C.L.C., Inc.	7-11-79	LIB	XII
Operations Research Corporation	7-13-78	DIR	XII
Peat, Manwick and Mitchell	6-19-78	DIR	XII
	8-28-78	FIN	XII
Pinkerton	7-10-78	EMP EMP	XI XII
Prentice-Hall	4-11-78	OFE	XII
Price Waterhouse	4-3-78	DIR	XII*
The Research Fund	11-7-78	DIR	XII
Glen Schulmann Associates	2-6-78	DIR	XII
Solar Energy Research Institute	9-25-78	DIR	XII
	5-17-79	DIR	XIII
Systems Research Inc.	5-15-79	DIR	XIII
Teachers Insurance and Anxiety Association	7-15-79	DIR	XII
	6-29-79	DIR	XIII
Toinonseal Communications Inc.	9-5-78	DIR	XII
Union Carbide	8-18-78	DIR	XII
	1-25-79	FAC	IX
University Promotion Systems	5-3-78	DIR	XII
Angelo R. Venezian Inc.	1-20-78	DIR	XII
	3-7-79	DIR	XIII
Whalen Computor Service	3-27-78	DIR	XII

Purchaser	Date	Tape Description	
John Wiley and Sons	2-9-78	DIR	XI
	6-19-78	DIR	XII
	11-24-78	OFE	XII
	5-30-79	DIR	XIII
Fred Woolf Co.	12-7-78	DIR	XIII
Alvin B. Zeller Inc.	12-4-78	DIR	XII